BUSINESS PLAN

FOR THE

CONTROL PERIOD FY 2015-16 TO FY 2017-18

OF

ELECTRICITY DEPARTMENT, GOVERNMENT OF PUDUCHERRY

SUBMITTED TO

THE HON'BLE JOINT ELECTRICITY REGULATORY COMMISSION

GURGAON

BY

ELECTRICITY DEPARTMENT, GOVERNMENT OF PUDUCHERRY

SEPTEMBER 2014

BEFORE THE JOINT ELECTRICITY REGULATORY COMMISSION FOR THE STATE OF GOA, & UNION TERRITORIES, GURGAON

Filing No……

Case No……

TABLE OF CONTENTS

TABLE OF FIGURES

LIST OF TABLES

LIST OF ANNEXURES

LIST OF ABBREVIATIONS

Sr. No	Abbreviations	Descriptions
1	A&G	Administrative and General
2	ABT	Availability Based Tariff
3	ACoS	Average Cost of Supply/ Service
4	AMI	Automated Metering Infrastructure
5	AMR	Automatic Meter Reading
6	ARR	Aggregate Revenue Requirement
7	CAGR	Compound Annual Growth Rate
8	CEA	Central Electricity Authority
9	CERC	Central Electricity Regulatory Commission
10	CGS	Central Generating Station
11	CPI	Consumer Price Index
12	DELP	DSM based Efficient Lighting Programme
13	Discom	Distribution Companies
14	DSM	Demand Side Management
15	EA/The Act	The Electricity Act 2003
16	EDP/ PED	Electricity Department, Government of Puducherry
17	FOR	Forum of Regulators
18	FY	Financial Year
19	GFA	Gross Fixed Assets
20	GoI	Government of India
21	HT	High Tension
22	JERC	Joint Electricity Regulatory Commission
23	JICA	Japan International Cooperation Agency
24	KSEB	Kerala State Electricity Board
25	KV	Kilo Volt
26	kVA	Kilo Volt Ampere
27	kVAh	Kilo Volt Ampere Hour
28	kW	Kilo Watt
29	kWh	Kilo Watt Hour
30	LT	Low Tension
31	MOD	Merit Order Despatch
32	MoP	Ministry of Power
33	MOU	Memorandum of Understanding
34	MU	Million Units (Million kWh)
35	MVA	Mega Volt Ampere
36	MW	Mega Watt

Sr. No	Abbreviations	Descriptions
37	MYT	Multi Year Tariff
38	NTP	National Tariff Policy
39	NTPC	National Thermal Power Corporation
40	O&M	Operation & Maintenance
41	PFC	Power Finance Corporation
42	PGCIL	Power Grid Corporation of India Limited
43	PLCC	Power Line Carrier Communication
44	PLR	Prime Lending Rate
45	POSOCO	Power System Operation Control
46	PPA	Power Purchase Agreement
47	PPCL	Puducherry Power Corporation Limited
48	R&M	Repair and Maintenance
49	R-APDRP	Restructured Accelerated Power Development and Reforms Programme
50	REC	Renewable Energy Certificate
51	ROE	Return on Equity
52	RPO	Renewable Purchase Obligation
53	Rs	Rupees
54	SBI	State Bank of India
55	SECI	Solar Energy Corporation of India
56	SLDC	State Load Dispatch Centre
57	SRPC	Southern Regional Power Committee
58	SWOT	Strength, Weakness, Opportunity and Threats
59	TNEB	Tamil Nadu Electricity Board
60	T&D	Transmission and Distribution
61	UI Charges	Unscheduled Interchange Charges
62	w.e.f	With effect from
63	WPI	Wholesale Price Index
64	y-o-y	Year on year

CHAPTER 1. INTRODUCTION

1.1 Background – Power Sector

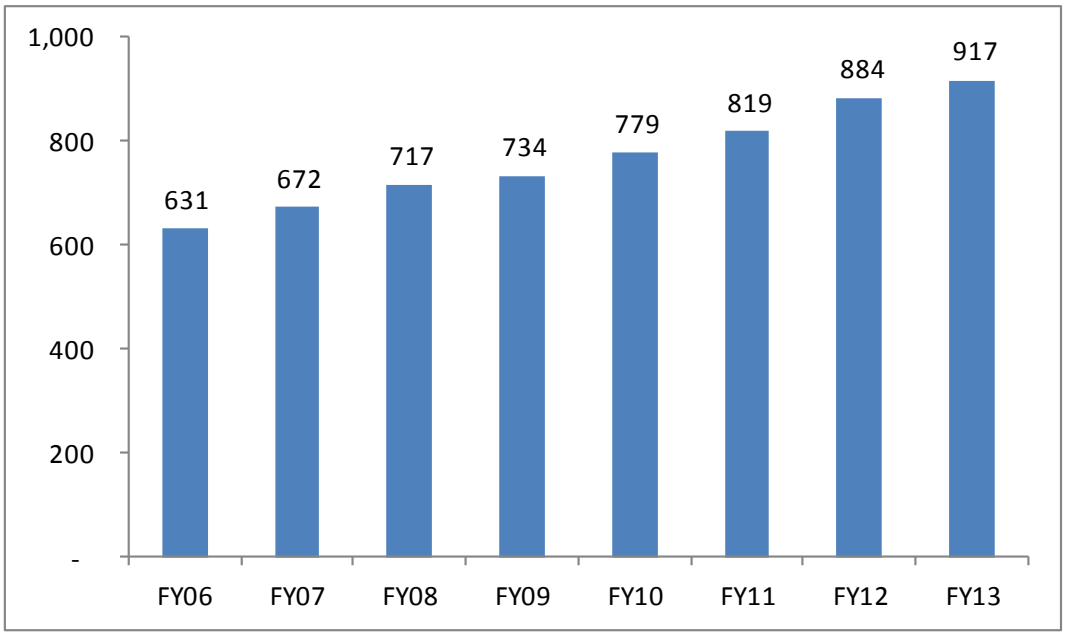
1.1.1 The Indian power sector has witnessed multifaceted changes over the last decade post the passage of the forward looking Electricity Act, 2003. These include introduction of significant reform measures, enhanced regulatory regime, increased level of private sector participation, development of state-of-the-art grid linking the entire country and focus on renewable energy generation. India in the emerging markets has been one of the fastest growing economies.

1.1.2 Energy requirement and supply is a strategic input and one of the key drivers for economic and social development behind any growing country.

1.1.3 As energy plays a very vital role in industrial production and common man's life, it has become extremely essential to boost the growth in energy segment for the growth of the country.

1.1.4 With the growing demand in energy requirement, the annual per capita energy consumption has grown significantly. The low per capita consumption of electric power in India compared to the world average presents a significant potential for sustainable growth in the demand for electric power in India.

Figure 1: All India per Capita Consumption (in kWh)



Source: CEA

1.1.5 According to 18th Electric Power Survey (EPS), India's peak demand is expected to grow at a CAGR of 9.6% over a period of 8 years (FY 2014 to FY 2022) and would require a generating capacity of 289GW by 2022.

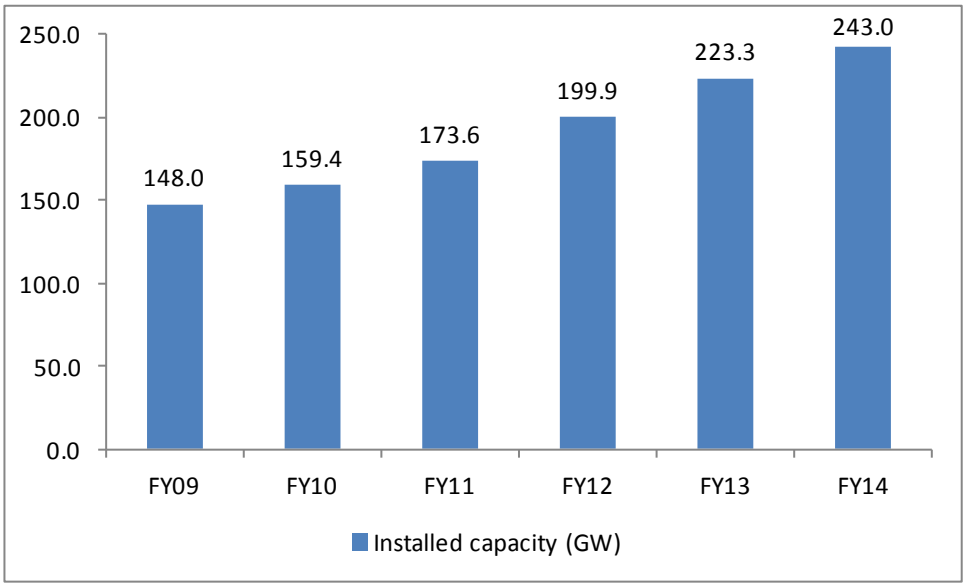
1.1.6 Distribution is the most critical segment of the electricity business chain. The distribution segment is still largely government owned and run and will require the sustained attention of the authorities if the sector performance is to improve. The real challenge of reforms in the power sector lies in efficient management of the distribution sector which has been neglected so far and hence, the time has now come for the country to improve its distribution infrastructure and the management of distribution utilities.

1.2 All India Installed Capacity

1.2.1 India is one of the largest power-generating countries in the world with an installed capacity of 243029 MW (as of March, 2014). Over the last 6 years, the installed capacity of the country grew at a CAGR of 9.3% while the total power generated grew at a CAGR of 4%.

1.2.2 The all India installed capacity (GW) of is given hereunder:

Figure 2: All India Installed Capacity (in GW) – As of March 2014



Source: CEA

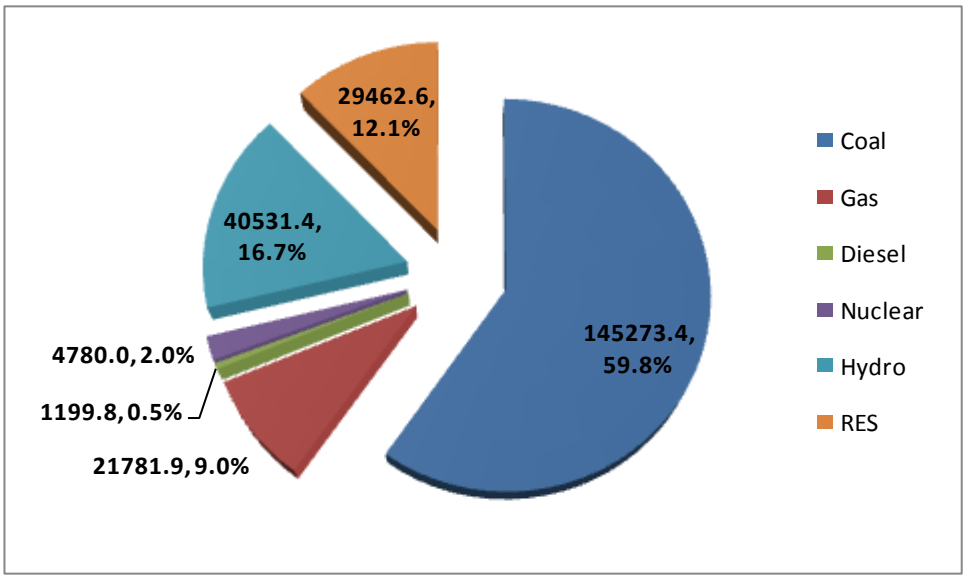
1.2.3 India has the fifth largest generation capacity in the world with an installed capacity of ~243 GW as of March, 2014, which is about 4% of global power generation.

1.2.4 Indian per capita electricity consumption grew only at 4.7% CAGR over the last seven years mirroring the capacity addition in the country. However, compared to most of the developed like US (~13246 kWh[1]) or even other developing countries like China (~3298 kWh[1]), India's per capita consumption is fairly low (~917.18 kWh in FY 2012-13 - provisional figures). India currently suffers from a major shortage of electricity generation capacity, even though it is the world's fourth largest energy consumer after United States, China and Russia.

1.2.5 The government has set an ambitious capacity addition target of 88 GW to be achieved in the 12th plan owing to which the power sector is poised for significant expansion. This has resulted in massive capacity addition plans being proposed in the sub-sectors of Generation, Transmission and Distribution.

1.2.6 The capacity addition has increased rapidly in the last few years i.e. from the last two years of the 11th Plan. The 11th Plan saw a record capacity addition of ~55 GW which is more than the combined capacity addition of the previous two five year Plans (9th and 10th Plan). The generation capacity in India is a mix of thermal, hydro, nuclear, and renewable energy sources and over the year's coal (thermal) has become a dominant source of power generation. As of March, 2014, thermal energy contributed 69.3% (1,68,255 MW) of the country's total power generating capacity, while hydro energy contributed 16.7% (40,531.4 MW), RES around 12.1% (29,462.6 MW), and nuclear energy contributed 2% (4,780 MW) to the total capacity. The details of fuel wise share in power generation are given below:

Figure 3: All India Fuel wise Share in Installed Generation Capacity (MW) – As of March 2014



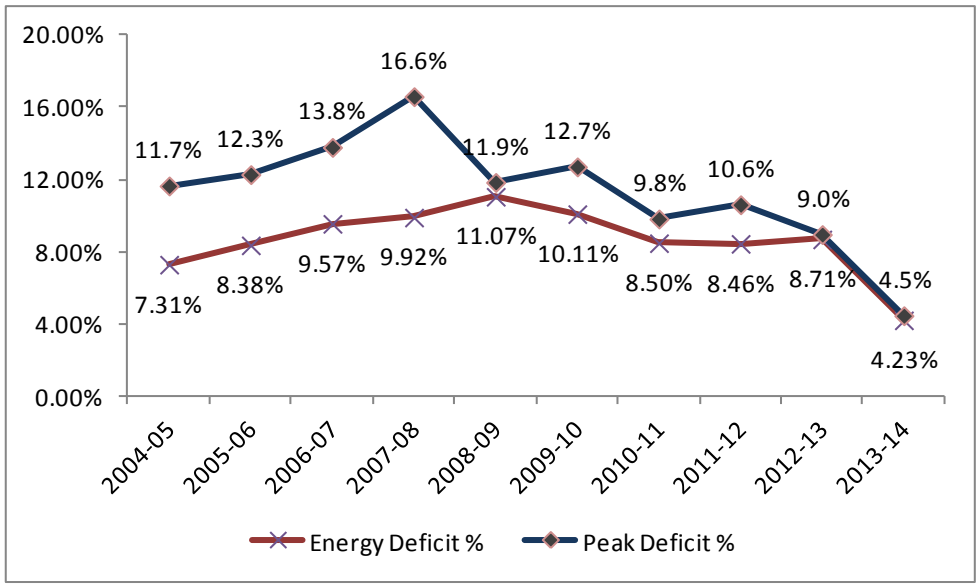
Source: CEA

[1] World Development Indicators, Word Bank

1.2.7 Historically, India has experienced shortages in energy and peak power requirements. The Peak deficit averaged 11.29% and energy deficit averaged 8.63% during FY2005 to FY2014.

1.2.8 The demand supply gap for electricity has hovered ~8-9% for the last few years, despite significant overall progress in the power sector. The shortages in energy and peak power have been primarily due to the slow pace of capacity addition, fuel shortage and the growing demand. The deficit in FY2014 has come down due to decrease in demand for power due to slowdown in the economy. However, the demand is expected to pick–up with the expected revival in the economy, which may increase the deficit if the issues and problems affecting energy generation are not addressed.

Figure 4: All India Peak and Energy Deficit



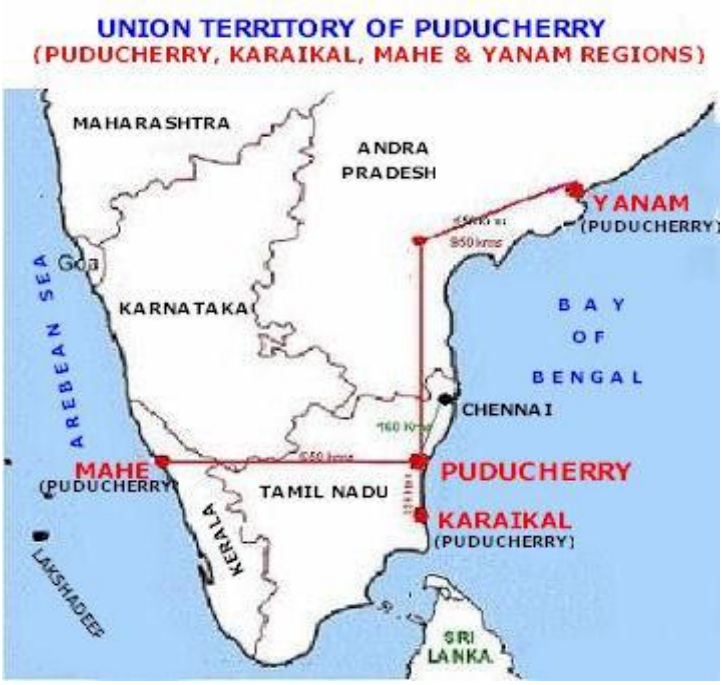
Source: CEA

1.3 Power Sector in Puducherry

1.3.1 The Union Territory of Puducherry is spread over an area of 492 sq. km and consists of four enclaves which are widely scattered in the three Southern States viz Puducherry and Karaikal enclaves in Tamil Nadu, Mahe enclave in Kerala and Yanam enclave in Andhara Pardesh. Puducherry which is the headquarters of the Union Territory is located 160 Kms down South of Chennai while Karaikal is located further down South at about 160 Kms from Puducherry. Mahe is located horizontally opposite to Puducherry on the Western coast at about 647 Kms from Puducherry and 58 Kms from Kozhikode, 24 Kms from Kannur in Kerala State. Yanam is located up North of Puducherry on the eastern coast at about 870 Kms from Puducherry and 24 Kms from Kakinada. The total population of the UT of Puducherry is 12,44,464 as

per provisional results of Census 2011.

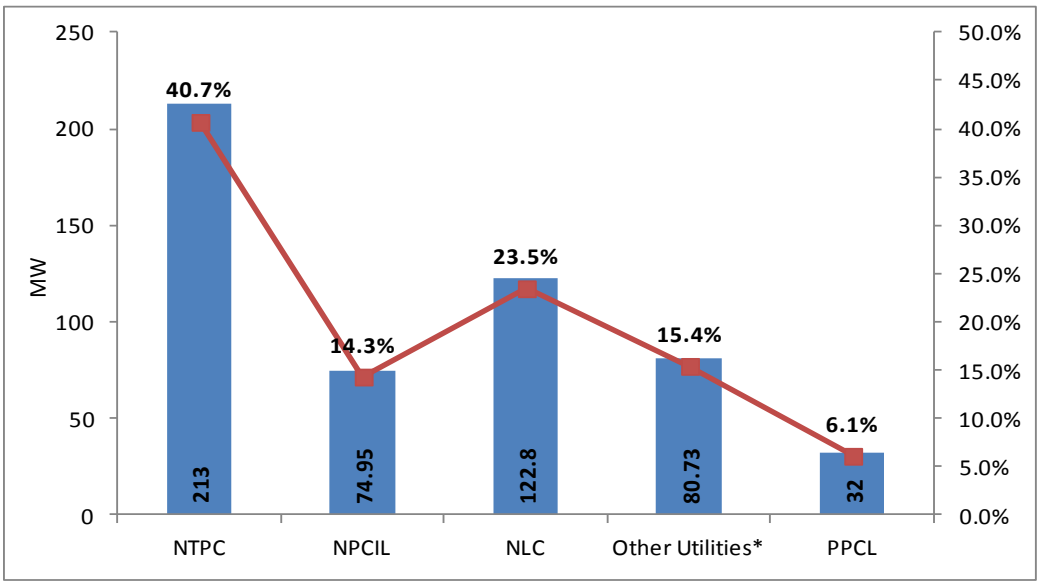
Figure 5: Union Territory of Puducherry



Source: Puducherry Electricity Department

1.3.2 The requirement of Power for the Union Territory is met from the allocation of power from various Central Generating Stations (CGS), purchase of power from neighbouring State Utilities and from the State owned Pondicherry Power Corporation which is running a 32.5 MW Gas based power plant in Karaikal region. The entire power generated from this plant is consumed in Karaikal region.

Figure 6: Power Supply Position in Puducherry (MW)



**KSEB and TNEB*

Source: Puducherry Electricity Department

1.3.3 The Electricity Department of Government of Puducherry (hereinafter referred to as "ED Puducherry" or "EDP"), performs the functions of transmission and distribution of electric power to the Union Territory. The Puducherry Electricity Department is a deemed licensee under Section 14 of Electricity Act, 2003 and is carrying on the business of Transmission, Distribution and Retail supply of Electricity in Puducherry, Karaikal, Yanam and Mahe Regions of the Union Territory of Puducherry. With all the Towns and villages electrified in as early as 1972, the Union Territory is 100% fully electrified.

1.4 Business Activities

1.4.1 The Electricity Department is a deemed Distribution Licensee within the meaning of Section 2 (17) of Electricity Act 2003 and pursuant to the Section 14 of the Electricity Act. Further, Section 42 and 43 of the Electricity Act 2003 prescribes the following duties of the deemed Distribution Licensee:

- To develop and maintain an efficient, co-ordinated and economical distribution system;
- To supply electricity on an application of the consumer in accordance with the provisions specified in the Electricity Act 2003;
- To provide non-discriminatory open access to the consumers;
- To establish a forum for redressal of grievances of the consumers.

1.4.2 The Main Object to be pursued is to undertake the transmission, distribution and retail supply of electricity in its license area and for this purpose to plan, acquire, establish, construct, erect, lay, operate, run, manage, maintain, enlarge, alter, renovate, modernize, work and use a power system network in all its aspects and also to carry on the business of purchasing, selling, importing, exporting, wheeling, trading of electrical energy, including formulation of tariff, billing and collection thereof and then to study, investigate, collect information and data, review operations, plan, research, design and prepare project reports, diagnose operational difficulties and weaknesses and advise on the remedial measures to improve and modernize existing sub-transmission and supply lines and sub-stations.

1.5 Objective of Business Plan

1.5.1 A business plan is conventionally defined as:

"Business Plan is a formal statement of a set of business goals, the reasons why they are believed attainable, and the plan for reaching those goals. It may also contain background information about the organization or team attempting to reach those goals."

1.5.2 Accordingly, the business plan for EDP is developed keeping in mind the growth plan for the control period after considering the strengths and weaknesses of the department and evaluating its business environment. The business environment has evolved considerably in a number of ways that affects EDP's strategic planning. The business plan is intended to give a comprehensive and up-to-date representation of the department, its market, the impact of new regulations, and the strategies that has been developed by EDP to achieve the same. *However, as mentioned above, there are number of internal and external factors which affect the planning of the department and thus, it makes this a very dynamic document and which calls for regular reviews of the plan with a view to introduce any corrections.*

1.5.3 The Joint Electricity Regulatory Commission, hereafter referred to as Hon'ble Commission, in exercise of the powers conferred by the Electricity Act, 2003, notified the Joint Electricity Regulatory Commission for the State of Goa and Union Territories (Multi Year Distribution Tariff) Regulations, 2014 in May, 2014. As part of the same, EDP needs to submit a Business Plan for the period starting from April 2015 to March 2018 for the 3 year control period.

1.5.4 Regulation 5.1 of Joint Electricity Regulatory Commission for the State of Goa and Union Territories (Multi Year Distribution Tariff) Regulations, 2014 states that:

"The Distribution Licensee shall file Business Plan, for Control Period of three financial years from April 1, 2015 to March 31, 2018, which shall comprise but not be limited to detailed category-wise sales and demand projections, power procurement plan, capital investment plan, financing plan and physical targets".

Further Regulations 5.2 and 5.3 states that:

"5.2 The capital investment plan shall show separately, on-going projects that will spill into the financial year 2015-2016 and new projects (along with justification) that will commence and scheduled to be completed within or beyond the tariff period i.e. by or beyond 31.03.2018. The Commission shall consider and approve the capital investment plan for which the Distribution Licensee shall provide relevant technical and commercial details."

"5.3 The Distribution Licensees shall project the power purchase requirement after considering effect of target set for Energy Efficiency (EE) and Demand Side Management (DSM) schemes.

Provided that the power purchase cost of the respective Distribution Licensee shall be allowed after considering the target set by the Commission for Energy Efficiency (EE) and Demand Side Management (DSM) schemes, if any, and any shortfall in meeting the target shall be disallowed by the Commission at marginal cost of power purchase

of that Distribution Licensee for determination of tariff. "

1.5.5 The Business Plan does prepared by EDP does not include the forecast of Aggregate Revenue Requirement for the control period as the same has to be submitted based on the Business Plan as approved by the Hon'ble Commission by order. The relevant extracts, Regulation 4.2 (ii) and 4.2 (iii), of the MYT regulations are mentioned below:

"4.2 The Multi-Year Tariff framework shall be based on the following elements, for calculation of Aggregate Revenue Requirement and expected revenue from tariff and charges for Distribution Business:

ii. A detailed Business Plan based on the Operational Norms and trajectories of performance parameters specified in these Regulations, for each year of the Control Period, shall be submitted by the applicant for the Commission's approval;

iii. Based on the Business Plan as approved by the Commission by order, the applicant shall submit a petition with the forecast of Aggregate Revenue Requirement and expected revenue from existing tariff for each year of the Control Period, and the Commission shall approve the tariff for each year of the Control Period; "

1.6 Approach to Business Plan

1.6.1 EDP has prepared the Business Plan taking cognizance of the existing internal factors and external business environment affecting the business. EDP submits that the Business Plan being a dynamic document may need to be updated at periodic intervals taking into account the changes in the internal and external environment and these changes would be intimated to the Hon'ble Commission from time to time. In line with clause 5 of the MYT Regulations 2014, the Business Plan comprises of the category-wise sales and demand projections, power procurement plan, capital investment plan, financing plan, O&M Norms and targets of distribution loss for the control period starting from FY 2015-16 for a period of three years upto FY 2017-18. Apart from this, EDP has also attempted to develop this business plan with a view to chart out the growth plan for the period after considering the strength and weakness of the department and evaluating its business environment thereby considering following significant key elements:

- SWOT Analysis
- Market Issues & Challenges
- Past Performance Analysis

1.6.2 The projections are based on the audited figures available of EDP whereby audit of FY 2010-11 has been completed and the Provisional audit figures of FY 2011-12 to FY

2012-13 are available. The Financial Statements of EDP are enclosed as per **Error! Reference source not found.** and **Error! Reference source not found.**.

1.6.3 Therefore, the basic principles considered while preparing the Business Plan is keeping in mind the requisites to address the initiatives to enhance the power sector viz network development, tariff management, efficient operation and customer service.

1.6.4 ***Network development strategy:***

As per Section 43 of the Electricity Act, 2003, the distribution licensees are obliged to supply power to bonafide consumer who desires to avail power supply.

EDP would continue to carry out its universal service obligation of supplying power to the bonafide consumers in the future as well. EDP will also maintain its current efforts in order to strengthen their distribution system furthermore so as to provided even better services. EDP is planning on availing a loan from Japan International Cooperation Agency (JICA) for improvement in transmission and distribution system to meet the growing power demand and to design a system with lesser T&D loss.

1.6.5 ***Tariff management:***

The Tariff is being determined by the Hon'ble Commission on a cost plus approach in line with the provisions specified in section 62 of the Electricity Act 2003 and as per the JERC (Terms and Conditions of Tariff) Regulations, 2009. However, with effect from April 1, 2015 tariff will be determined under a Multi-Year Tariff (MYT) framework as per JERC (Multi Year Distribution Tariff) Regulations, 2014. The major components of tariff are power purchase cost, O&M cost, cost associated with capital and such costs needs to be optimized. EDP has been rationalizing these costs through long term PPA with CGS, maintaining reduced loss levels and efficient business operations.

1.6.6 ***Customer service:***

The main intent of EDP is to serve their consumers effectively and efficiently and in an attempt to do the same EDP has been carrying out various initiatives like setting up Consumer Grievance Redressal Forum (CGRF), Customer Relationship Centre, internet based payment, DSM initiatives like distribution of LED lamps and plans on extending the same to street lights.

CHAPTER 2. EDP: POWER BUSINESS IN PUDUCHERRY

2.1 Demographic Profile

2.1.1 The Union Territory of Puducherry is spread over an area of 492 sq. km, which comprises the four erstwhile French establishments of Puducherry, Karaikal, Mahe and Yanam. The total population of the UT of Puducherry is 12,44,464 as per provisional results of Census 2011.

- Puducherry region, which is the largest of all four, lies on the east coast, consisting of 12 scattered areas, surrounded by the State of Tamil Nadu and by the Bay of Bengal on the East.
- Karaikal region is about 150 km South of Puducherry. Like Puducherry region, the Karaikal region is also surrounded by the State of Tamil Nadu and by the Bay of Bengal on the East.
- Yanam region is located approximately 840 km north-east of Puducherry near Kakinada in Andhra Pradesh.
- Mahe Region is located approximately 653 km away on the west coast of India, near Tellicherry in Kerala

2.1.2 Puducherry region is situated on the Coramandal Coast north of Pennaiyar River and is bounded by Bay of Bengal on the East and Cuddalore districts of Tamil Nadu on other sides. It has an area of 293 sq. Km and has the highest population of 950289 among the four regions. Puducherry is not a contiguous area but interspersed with bits of territory of Tamil Nadu. Puducherry town is the capital of Union Territory.

2.1.3 Karaikal region lies 150 kilometres south of Puducherry and it is bounded on north, south and west by the Nagapattinam district of Tamil Nadu and on the east by Bay of Bengal. It has an area of 160 sq. km lying in the Cauvery Delta being irrigated by the canals of the Cauvery River. It has the second highest population among the four regions.

2.1.4 Mahe region is isolated from Puducherry by about 653 km and has an area of 9 sq. km and is located at a distance of about 6 km south of Tellichery town. Mahe town is situated on the southern bank of Mahe region with the smallest population of 42816.

2.1.5 Yanam region is situated on the East coast as a pocket in the East Godavari District of Andhra Pradesh and Lies at a distance of 28 km south of Kakinada town. It has a population of 55626 spread over an area of 30sq. km. Yanam is built on the spot

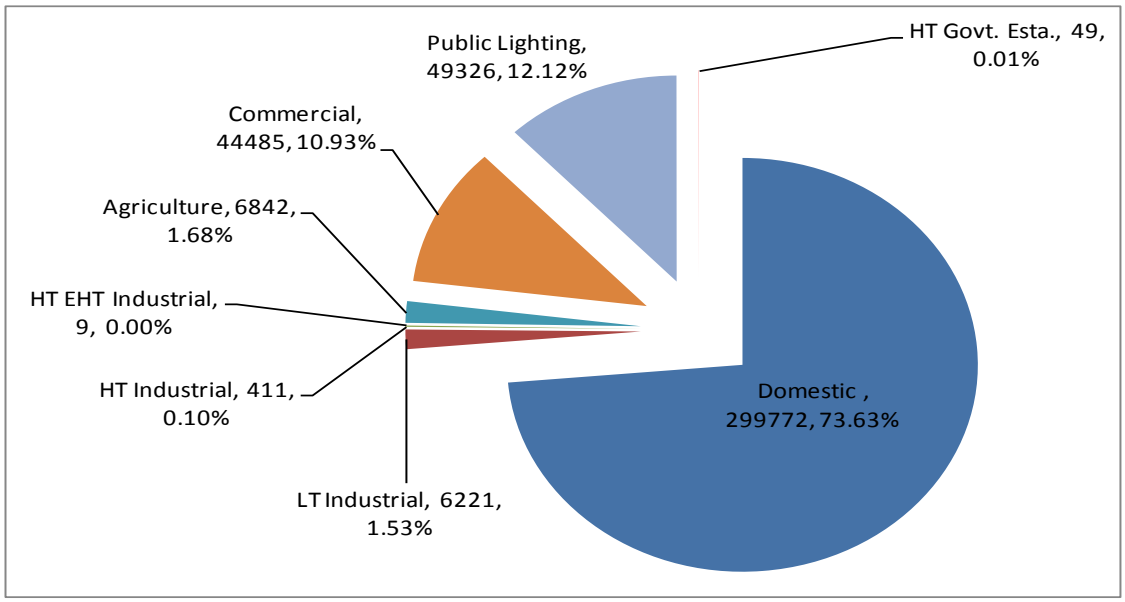
where the rivers of Godavari and Coringa separate and is bounded on the east and south by one or the other of these two rivers.

2.1.6 The Electricity Department of Government of Puducherry performs the functions of transmission and distribution of electric power to the Union Territory of Puducherry. The sole generating station in Puducherry is a 32.5 MW combined cycle gas power plant in Karaikal owned by the Puducherry Power Corporation Limited. The entire power requirement of Puducherry is met from the power allocated from the Central Generating Stations, Tamil Nadu Electricity Board, Kerala State Electricity Board and from the Puducherry Power Corporation Limited.

2.1.7 System Control Centre (SCC), which is a part of Electricity Department, interacts with Regional Load Dispatch Centre (RLDC) for optimum scheduling and dispatch of electricity. It monitors grid operation on real time basis and passes on necessary instructions to field staff to control flow of energy.

2.1.8 EDP currently serves a consumer base of around 4.07 lakh spread over the four non-contiguous regions. The Department has a mix of domestic, commercial, agriculture, industrial and HT industrial consumers.

Figure 7: Category-wise Number of Consumers for 2013-14



Source: Puducherry Electricity Department

2.2 Distribution Infrastructure

2.2.1 EDP operates a transmission network of 110 kV and 230 kV and distribution network at 33 kV, 22 kV, 11 kV and LT levels. It supplies power to consumer through its 17 substations, 1227.66 km of HT line, 2235 distribution transformer and 4464.15 km of

LT line. ED has also gone for 70.61 km of HT and 806.69 km of LT underground cabling of certain crowded areas.

2.2.2 The network configuration as on 31st July, 2014 is as given below:

Table 1: Network Configuration (as on 31st July 2014)

Voltage	Line Details	Sub-Station Details		
	Lines	Capacity MVA	Substations	Transformation Capacity
	(Km)	(MVA)	(Nos)	(MVA)
Transmission				
230 kV/110kV	54	100*4 + 80*2	3	560
132 kV/33-11 kV	44	2*10 + 1*16	1	36
110 kV/22-11 kV	280	25*1 + 16*27 + 10*7 + 31.5*2	14	590
Distribution				
33/11kV		5*2	1	10
22 kV & 11 kV (Overhead)	940			
22 kV & 11 kV (Underground)	67			
LT (Overhead)	2477			
LT (Underground)	801			
Distribution Transformer capacity	**11kV Transformers**	**Total Transformation Capacity**	**22kV Transformers**	**Total Transformation Capacity**
kVA	**Nos.**	**MVA**	**Nos.**	**MVA**
50	1	0.05	0	0.00
63	1	0.06	0	0.00
100	148	14.80	189	18.90
200	218	43.60	863	172.60
250	1	0.25	0	0.00
315	126	39.69	672	211.68
500		0.00	11	5.50
630	64	40.32	0	0.00
Total	**559**	**138.77**	**1735**	**408.68**
Total Number of Transformers			**Nos.**	**2294**
Capacity			**MVA**	**547**

2.2.3 Power to Puducherry region is fed through three numbers of 230/ 110kV Auto-Sub Stations with total installed capacity of 560MVA. Eleven 110/22-11kV Sub Stations with a total installed capacity of 399MVA are connected to the above auto-Sub Stations.

2.2.4 Power to Karaikal region is fed through two numbers of the 110/11kV Sub Station with an installed capacity of 80MVA owned by EDP and one number of the 110/11kV Sub Station owned by PPCL with an installed capacity of 30MVA.

2.2.5 In Mahe, there is one 110/11kV Sub Station of capacity 20MVA and in Yanam region,

there is one 132/33-11kV Sub Station of capacity 36MVA and one 33/11kV Sub Station of 10MVA capacity.

2.2.6 The Transmission and Distribution Losses and the AT&C Losses are comparatively lower than that in many of the other states and Union Territories. The Transmission & Distribution loss of the system is estimated to be around 12.50% for FY2013-14.

2.2.7 The Government of Puducherry has initiated the process of Power Sector reforms in the Union Territory. The objectives of Power Sector Reform program are to achieve sustainable development by promoting competition, efficiency & transparency to result in quality, reliable power supply to all consumers at affordable cost and to make the power sector commercially viable. The power utilities all over the country have taken up institutional strengthening through sustainable initiatives in a systematic & focused approach.

2.3 SWOT Analysis

2.3.1 The analysis of the strength, weakness, opportunities and threats as perceived by EDP is summarized in the following figure:

Figure 8: SWOT Analysis of EDP

STRENGTHS	WEAKNESS
• Uninterrupted Power Supply • Quality Power Supply • Lower Losses • Competitive Tariff and Simple & Robust Tariff Structure • Lower Operational Cost	• Near Complete Reliance on External Source for Power • Last Mile Connectivity to Consumers • Poor Collection Efficiency • Ageing Distribution Network
OPPORTUNITIES	**THREATS**
• Corporatisation of the Department • Scope for Improvement in Collection Efficiency • Setting up Robust Smart Grid Infrastructure • Distribution System Strengthening • Business Growth due to Improved Lifestyle • Promotion of Rooftop Solar PV Systems • Rationalisation of Workforce	• High Growth Rate of Domestic Consumers than Industrial Consumers • Increase in Cost of Generation • Lack of Land availability

2.3.2 ***STRENGTHS:***

- **Uninterrupted Power Supply:** EDP for long has been able to supply uninterrupted power to its consumers thereby not letting its consumers subject

to regular load shedding and has the capability to do so in the future.

- **Quality Power Supply:** EDP has been providing quality and reliable power supply to its consumers.
- **Lower Losses:** EDP has been very proficient in reducing the Distribution Losses over the last few years.
- **Competitive Tariff and Simple & Robust Tariff Structure:** EDP has lower tariffs as compared to the other utilities in the neighbouring States and the tariff structure is the one of the simplest and robust when compared to other utilities in the Country.
- **Lower Operational Cost:** EDP has low operational costs inspite of having four regions spread over four states.

2.3.3 ***WEAKNESSES:***

- **Near Complete Reliance on External Source for Power:** Except for a meagre 32.5 MW internal generation, EDP relies on power from external sources like CGS and neighbouring state utilities for sourcing power.
- **Last Mile Connectivity to Consumers:** Though EDP is supplying reliable and quality power to its consumers; it is facing last mile connectivity issues due to saturation of its LT and HT feeders, as well as power transformers.
- **Poor Collection Efficiency:** The collection efficiency has been poor with losses of ~5% in collection which is affecting EDP's revenue.
- **Ageing Distribution Network:** EDP has been supplying electricity for a very long time and has also been maintaining its network. However, with passage of time the Distribution Network has been showing signs of ageing and this shall lead to deterioration in performance of EDP if adequate timely steps are not initiated.

2.3.4 ***OPPORTUNITIES:***

- **Corporatisation of the Department:** EDP which is predominantly a distribution agency in the UT of Puducherry, has the opportunity to transform itself into a self sustaining and profit making corporate body, and to improve the level of consumer satisfaction by providing uninterrupted quality power at affordable rates.
- **Scope for Improvement in Collection Efficiency:** EDP has the opportunity to reduce it's under recoveries by setting up a robust system which in turn may improve its revenue generation.
- **Setting up Robust Smart Grid Infrastructure:** EDP has been the front runner in setting up a live smart grid pilot project to improve the distribution infrastructure. There is further scope for setting up a more robust smart

infrastructure with adequate support from both the Central and State Government.

- **Distribution System Strengthening:** EDP, as part of RAPDRP is setting up distribution infrastructure in the UT and there are opportunities to increase the pace and scale of distribution system strengthening efforts.
- **Business Growth due to Improved Lifestyle:** Over the last few years, the Union Territory of Puducherry has been experiencing a surge in the population. Also due to the improved lifestyle of consumers a similar kind of trend shall continue to follow in the near future. As such, EDP foresees an expansion of customer base and load growth in its license area.
- **Promotion of Rooftop Solar PV Systems:** As part of its efforts to reduce reliance on external sources of power and promote renewable energy sources, EDP can promote setting up of rooftop solar systems in Government buildings and residential households.
- **Rationalisation of Workforce:** EDP has the opportunity to strengthen its workforce to meet the growing demands of the consumer and maintain a highly efficient distribution system and bring in accountability towards discharge of the duties as a service provider.

2.3.5 ***THREATS:***

- **High Growth Rate of Domestic Consumers than Industrial Consumers:** The domestic consumer base has been increasing at a faster pace than the industrial consumer base which may be a cause of concern as decrease in number of high paying consumer's (cross subsidising consumers) may affect revenue generation for the department.
- **Increase in Cost of Generation:** EDP relies on external source of power and the cost of generation has been increasing (primarily due to domestic fuel supply concerns and use of imported coal) which may lead to increase in tariffs for consumers. Further, the capital cost of new power plants has gone up substantially resulting in higher power tariff from new generating units both under central sector as well as private power generating companies. This shall cause hardship on its consumers and EDP in no way wants to burden its consumers.
- **Lack of Land availability:** Lack of land availability to carry out distribution strengthening works is causing difficulties in expansion of distribution network of EDP.

2.3.6 The growth path for EDP would be the key takeaways which have emerged from the SWOT analysis. While, there would be opportunities galore on the horizon, it would

be only prudent on part of EDP to first target the short-comings and overcome them. Simultaneously, it would also be necessary to start identifying areas which it intends to target in the short to medium term and which areas it intends to target in the long term. Targeting everything simultaneously would lead no-where.

2.4 Human Resource Management

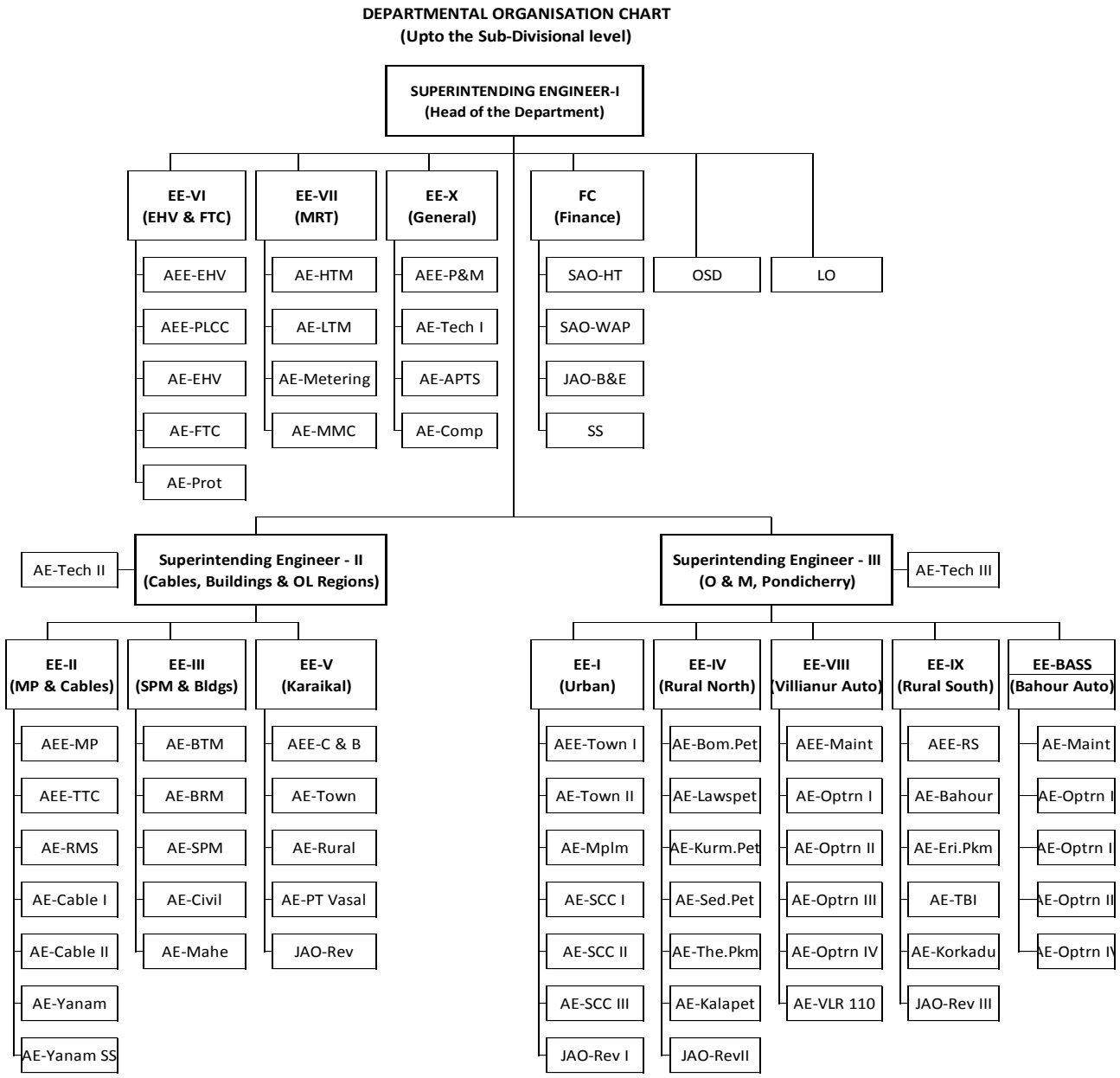
2.4.1 *Man Power Planning*

The responsibility towards maintenance of a highly efficient distribution system and the accountability towards discharge of the duties as a service provider have to be shared by the engineers and employees of the EDP. The biggest asset of any organization is its work force. Their optimum performance can elevate its progress. At the same time, it is also true that the career growth of its employees is directly related to the growth of the organization. The Electricity Department has a technical work force of over 2192 employees of different ranks who perform multifaceted technical functions and duties, viz., maintaining power supply, metering, billing, revenue collections, customer services etc.

2.4.2 *Organisational Structure*

EDP is divided into three circles each headed by an officer in the rank of Superintending Engineer. The Superintending Engineer - I (Head of circle I) is also the Head of the Department. The three circles consist of totally ten (10) Technical Divisions and one Finance Division. Each Technical Division is headed by an Executive Engineer and the Finance Division is headed by Financial Controller. Each Division consists of three to seven Sub Divisions. Sub Division offices are headed by Assistant Engineer. There are forty one Sub Division offices and they act as the link between the Divisional office and the field offices consisting of Sections headed by Junior Engineers. Section office is the direct customer facing unit and plays a key role in consumer satisfaction. In addition to the O&M Sub Division, a Revenue Section headed by a Junior Accounts Officer exists to take care of all revenue related activities for the division.

Figure 9: Organisational chart of EDP[2]



2.4.3 *Operation and Maintenance Functions*

a) Distribution Network:

In the existing set up, Distribution O&M is handled by Divisions I, IV and IX for Puducherry region, Division II for Yanam region, Division III for Mahe region and Division V for Karaikal region. The main activities falling under O&M of distribution Divisions are:

[2] EE – Executive Engineer; FC – Financial Controller; AEE – Assistant Executive Engineer; AE – Assistant Engineer; OSD – Officer on Special Duty; LO – Labour Officer; SAO – Senior Accounts Officer: JAO – Junior Accounts Officer; SS – Stores Superintendent; APTS – Anti Power Theft Squad; WAP – Works and Pricing Section; MRT – Meter and Relay testing; FCC – Feeder Construction and Commercial; HTM – HT Meter Reading; LTM – LT Meter Reading

- Operation and Maintenance of 110/22-11 KV EHT Sub-Stations
- Providing needed supply to consumers of various categories like domestic,
- Commercial, industry, (HT, LT) Street Lights, agriculture and others.
- Maintenance of quality power supply, which includes Breakdown and
- Preventive maintenance of , DTRs, overhead lines and cables, managing
- Breakdowns and fuse off calls
- Accurate metering.
- Prompt billing.
- Efficient Collections.
- Customer Care and Customer Services.
- Planning for improvement works
- HT Meter reading (by JE)
- Identification of pilferage and theft.

b) <u>Auto Sub-Stations:</u>

In the existing set up, Operation and Maintenance of Auto Sub Stations is handled by Division VIII and is headed by an Executive Engineer at the Division level. The division comprises of two Sub-Stations at Villianur and Bahour. While the maintenance of the Sub-Stations is being attended by maintenance wing headed by an AE, the operations of the Sub-Stations are being attended by shift duty wing headed by AE round the clock.

2.4.4 ***Other Functions***

a) <u>Division II</u>

It is the cable construction division responsible for planning, construction and augmentation works of underground cables for all the four regions. The division is headed by an Executive Engineer and there are two Sub Divisions for construction headed by Assistant Engineers. The Master Plan Sub Division is responsible for planning of Cable construction. The Technical Training Centre, the centre responsible for imparting training to the employees of the Department, is headed by an Assistant Executive Engineer and is a part of Division II. The Reforms activities in the Department were initiated in 2008 when the Reforms Project Management Cell was formed under the Executive Engineer II. VHF communications network is also maintained by this Division.

b) <u>Division VII</u>

It is responsible for material management and MRT. All procurement activities

are carried out by this division. In addition to this all testing and validation of meters and testing of protection equipment is carried out by MRT. This division is also responsible for theft and pilferage detection.

c) Division VI

It is responsible for all EHV construction activities (Transmission Lines and Sub Stations), new Feeder construction and augmentation works and planning for extension of supply to new HT services.

d) Division III

It is responsible for repairing the distribution transformers, administration of workshop and electrical maintenance of Government buildings. The O&M sub-Division of Mahe is under this Division

e) Division V

It is responsible for the overall operation of the Karaikal region. Division V handles the entire gamut of activities of the Karaikal region namely Operation & Maintenance, Construction and Building Maintenance.

f) Division X

It is directly attached to the Head of the Department and is responsible for assisting the Head of the Department in technical matters, Budget Planning and Monitoring and the Issue of technical and work sanctions. This division also acts as the Public Relations Office

g) The System Control Centre (SCC) is currently under the control of Division I.

h) Financial Controller

He is responsible for all revenue and accounting activities of the Department. Financial Controller is responsible for preparation of budget estimates, payment for power purchase and centrally procured items, CAG audit, Issue and close of Work Orders and Issue of Work Adjustment bills. Stores Superintendent is responsible for stores administration, for the whole Department.

2.4.5 ***Staffing***

a) Tech & Non-tech structuring and staffing

The total sanctioned employee strength of the department is 2804 of which 2192

belong to technical cadre and 612 belong to ministerial cadre. The ministerial cadre employees do not belong to the department and are appointed by the General Administration Department of the Government of Puducherry.

b) Transferability

While all technical employees are transferable to any of the four regions, the department does not have any control over the appointment or transfer of ministerial employees.

2.4.6 ***Training***

There is a need to ascertain the training of the existing human resource and to identify their core competencies with an aim to enhance their skills and finally place them in appropriate job positions. EDP endeavours to conduct training at periodic intervals for capacity building of its manpower.

2.4.7 ***Rationalization of Workforce***

At present, EDP is planning to rationalize its workforce to meet the enhanced expectation of the consumers and to fulfill its obligation to supply reliable and quality power. Efficiency improvement in consumer affairs, loss reduction, raising the level of billing and collection efficiency, better management at sectional level and optimum use of the available staff strength are some of the goals sought to be achieved by the rationalization of the work force. A proposal with respect the same has been sent to Ministry of Power, Government of India.

2.5 Initiatives to Improve the System

2.5.1 ***Smart Grid Project in Puducherry***

The Government of India, Ministry of Power (MoP) has taken the process of establishment of smart grids in India with an objective of achieving most efficient management of distribution system and to deliver best possible service to consumers. For this purpose MoP has set up “India Smart Grid Task Force (ISGTF)” and “Indian Smart Grid Forum (ISGF)” to evolve a roadmap for development of smart grid. The MoP has proposed to promote fourteen smart grid pilot projects in the country and one such project has been planned at Puducherry Urban Area at an estimated cost of Rs. 46.11 Crs.

The EDP has entered into an MoU with M/s Power Grid Corporation of India Limited wherein M/s Power Grid along with their associates/ collaborators would be responsible for establishment of pilot Smart Grid in Puducherry to jointly develop

the Smart Grid Pilot Project in Puducherry. The project will mainly involve installation of advance metering infrastructure (AMI) with a Central Data Control Centre which will help both the consumer and the EDP.

The Pilot Project was launched on 9th October, 2012 with inauguration of Control Center. The details of Progress made with the collaborators so far are as follows:

- 1400+ nos. of smart meters covering 6 transformers installed.
- CT operated DT meters installed at the above transformers.
- Distribution Transformer Monitoring Solution (DTMS) in 2 transformers.
- Fault Passage Indicators (FPIs), 2 sets, along with communication gateways.
- Smart Street Lighting system with capacity of 12.5 kVA and two more sets are ready for installation
- One no of 140 kVAR APFC panel installed
- 3 nos. of smart meters installed for Roof top solar for Net-metering for study purpose
- 1 no. of Power Transformer online monitoring system for 25MVA transformer at Marapalam sub station installed.

2.5.2 *DELP Scheme (DSM based Efficient Lighting Programme)*

Ministry of Power and Bureau of Energy Efficiency have been promoting energy efficiency. Efficient lighting in households, which accounts for 20% of energy, is an important thrust area to reduce peak demand as well as enhance awareness about energy efficiency and conservation to household consumers

EDP is implementing DSM based efficient lighting programme under demand side management programme in Puducherry along with Energy Efficiency Services Limited (EESL). As per the scheme consumers are being distributed 3 LED bulbs per household at a cost of Rs. 10 per bulb in exchange of ordinary incandescent bulb. This scheme will help consumers reduce their electricity bills by way of energy savings resulting from use of energy efficient lamps. Necessary approval of the Hon'ble Commission has been accorded for the implementation of the scheme with capital investment of Rs. 22.785 Crs.

The investment for the implementation of the project is being made by EESL and EDP shall make payment to EESL to recover the investment made on a periodic basis on the accrued energy efficiency resource benefits. EDP shall recover the annual payment made to EESL through ARR and tariff for the respective years.

2.5.3 *Anti-Theft Power Squad (ATPS)*

In a move to strengthen the action on pilferage of energy and to comply with the Regulations and reduce T&D losses by revoking illegal connections, checking meter tampering and correctness of the energy meters, EDP has formed two separate teams of engineers to inspect the consumer premises.

2.5.4 *Promotion of Renewable Power*

In a move to promote the use of renewable power in the UT of Puducherry, EDP plans on purchasing the energy generated from the various solar PV projects envisaged to be setup under various Government/ private/ NGO sectors (projects considered are mentioned in Chapter 6). These measures will help meet its RPO under solar category. Apart from this, EDP also is planning on setting up a 5 MW solar power PV plant in vacant land available at their Sub Station premises

2.6 Way Forward for EDP

EDP has been successfully supplying power to its consumers throughout the years, but there is much more that needs and can be done to provide power security to the people of UT of Puducherry. To achieve this, EDP has to prioritise the following activities:

- Curb down the distribution losses to optimum level between 10%-11%.
- Achieve collection efficiency of 100%.
- 100% billing on the basis of actual meter reading and elimination of average billing.
- Incorporate centralized MIS system and improve information flow from sub-divisions to head office.
- Use of technological advance and computerization for improving the efficiency, accountability, information levels & consumer satisfaction.
- Introduce AMI for all revenue intensive consumers.

CHAPTER 3. PAST PERFORMANCE ANALYSIS

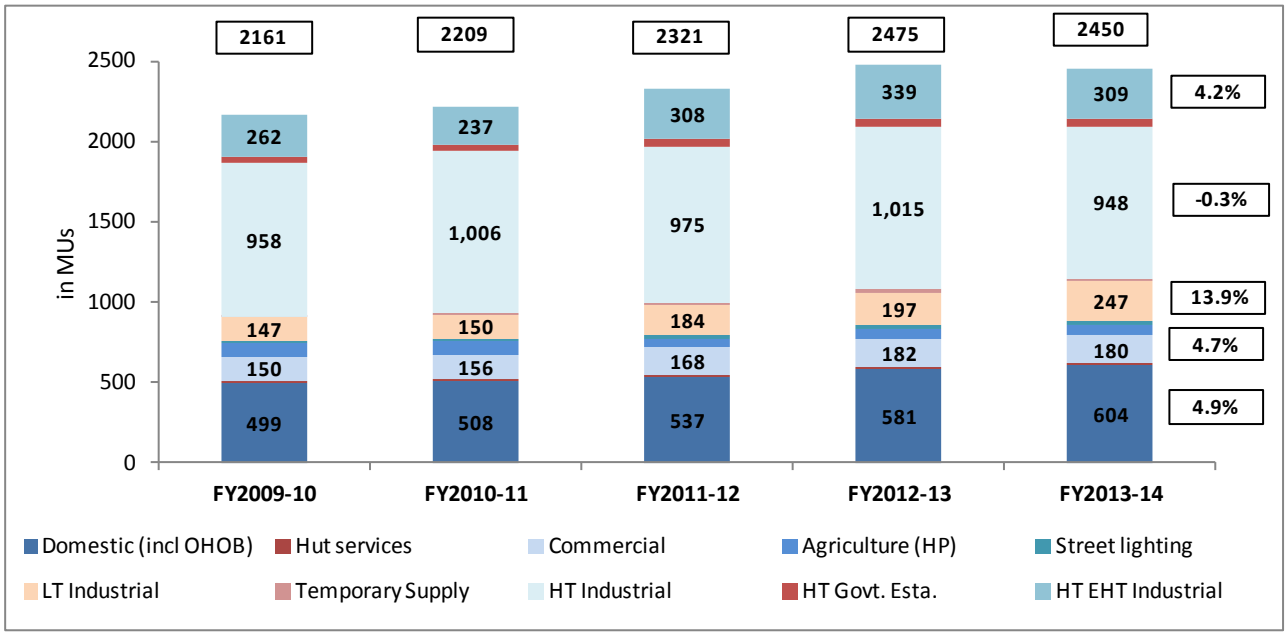
This section elucidates EDP's overview of power business into operational and financial performance for the previous years. A comparative analysis of the operational performance for various years in relation to sales, distribution Loss, collection efficiency etc are discussed herewith.

3.1 Sales

3.1.1 Currently, EDP is serving ~ 4.12 lakh consumers of which around 73.7% of the consumers are domestic consumers. The factors affecting the actual consumption of electrical energy are numerous and often beyond the control of the licensees (like policy, economy, individual consumer's consumption, recession, etc.) or even the consumers (like weather).

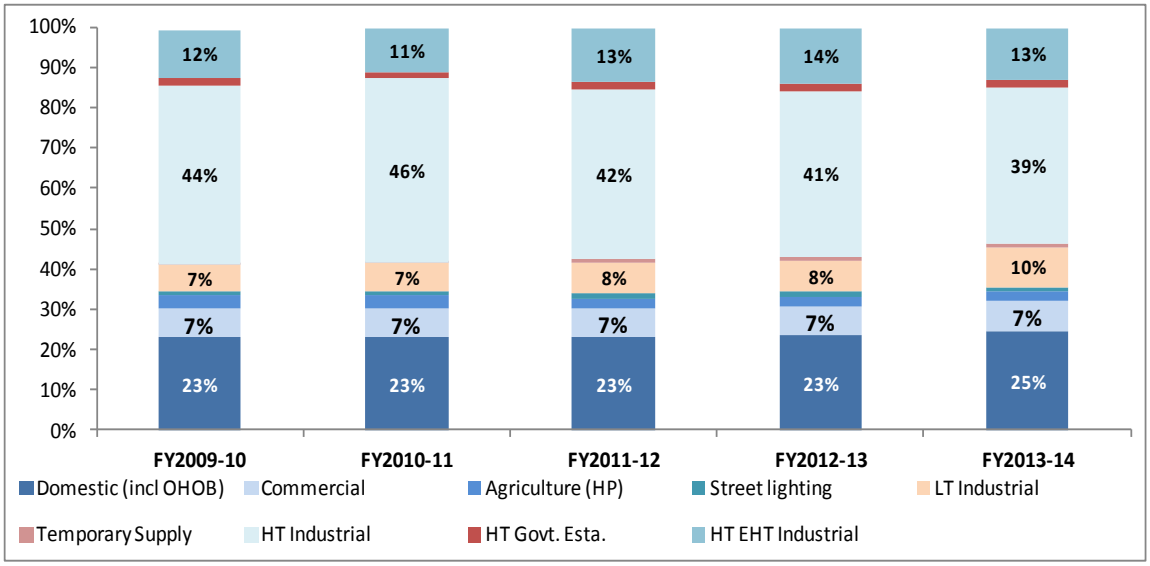
3.1.2 The following chart shows the total sales from FY2009-10 to FY2013-14.

Figure 10: Category-wise sales (MUs) – Year-wise



3.1.3 As outlined from the above table, the residential and the commercial category have shown a growth of around 4%-5% CAGR over the period FY2009 to FY2014 whereas the LT industrial category have shown a healthy growth rate of 13.9%. However, the overall CAGR witness by EDP in last 4 years is around 3.2%. The major concern as can be outlined from the above graph is that the industrial sale has been witnessing a downfall trend from FY2014 onwards due to global economic crisis

Figure 11: Category-wise sales (%) – Year-wise

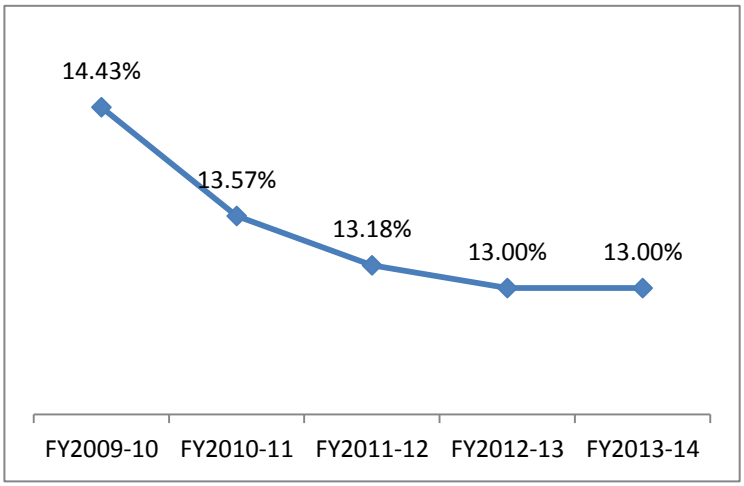


3.1.4 **Sales Mix:** As seen from the above figure HT Industrial consumption (HT-1) although varying but remains the highest (~39% in FY14) consuming category followed by Domestic category. The HT Industrial Extra High Tension (HT-3) is also a major consumer of power whereby combining the overall industrial sales (including HT and LT), the power consumed is ~61%.However, in past years, the share of HT industrial has been witnessing a decreasing trend and the LT industrial has been witnessing an increasing trend due to continuous and quality supply of power as well as the LT industries are the SME's which has been witnessing the local demand to sustain the market. The proportion of sales to commercial category is constant and is around 7%.

3.2 Transmission & Distribution losses

Figure 12: Trend in Transmission and Distribution Loss (%)

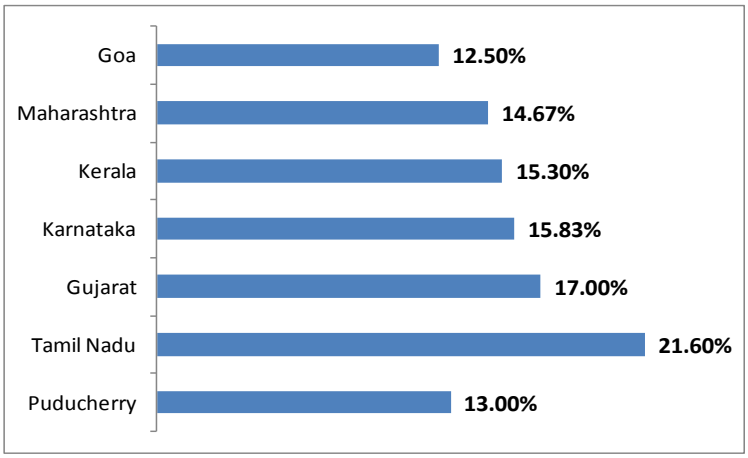
3.2.1 The Transmission & Distribution loss depends upon various factors such as size of the network, energy demand, connected Load etc. The Transmission Losses in the power system is an inherent character, and as such this power loss cannot be totally eliminated. However efforts are undertaken to reduce T&D loss to the desired permissible level.



3.2.2 There has been a continuous reduction in the transmission and distribution loss during the last five years. EDP has been committed towards taking the best possible measures to minimise its distribution losses by adopting pro-active approach and adopting best practices prevalent in the distribution sector in India. In addition to the above, EDP has made special emphasis in reducing the commercial losses by prevention and detection of energy theft from the system.

Figure 13: T&D loss comparison with other Utilities

3.2.3 The distribution losses are on par with the best performing utilities in the country. However, further it is submitted that the T&D loss at present has reached to the level whereby major reduction seems to be difficult.



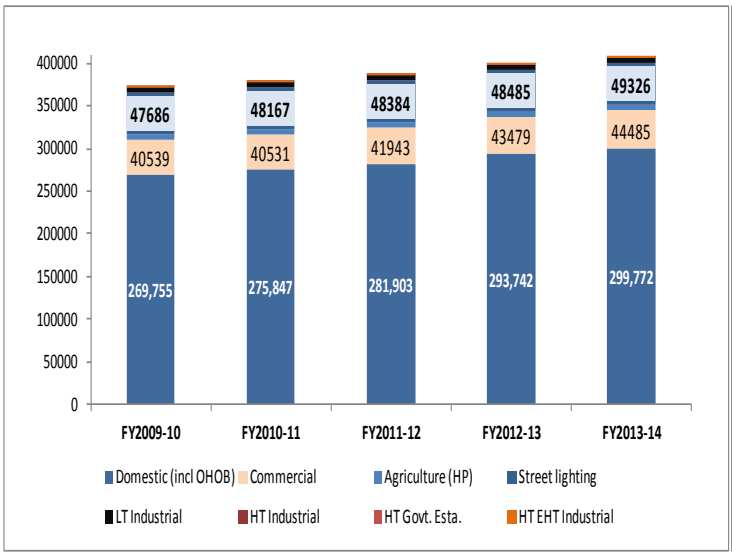
** As submitted by the State Utilities for FY2012-13*

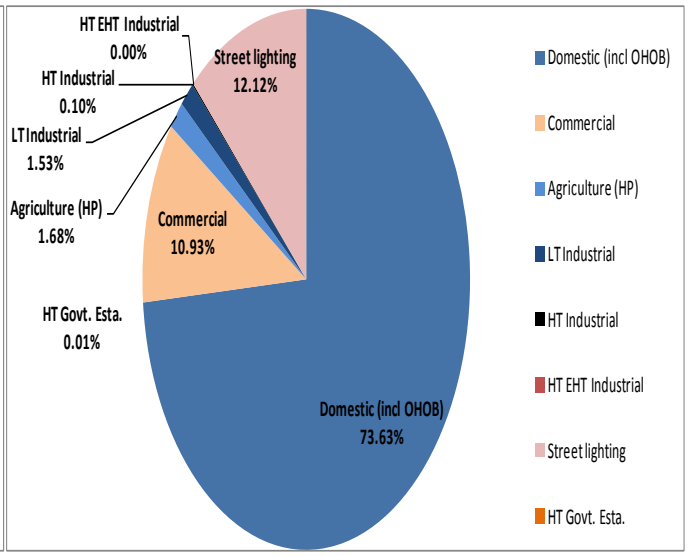
3.3 Consumer Base

3.3.1 Given below is a graph depicting the number of consumers across different categories for the period from FY2009-10 to FY2013-14. It can be seen that the number of consumers have been increasing over the period. The majority of the consumers are in the domestic category followed by the street lighting and commercial category.

Figure 14: Consumer Base

*pie chart based on FY 2013-14

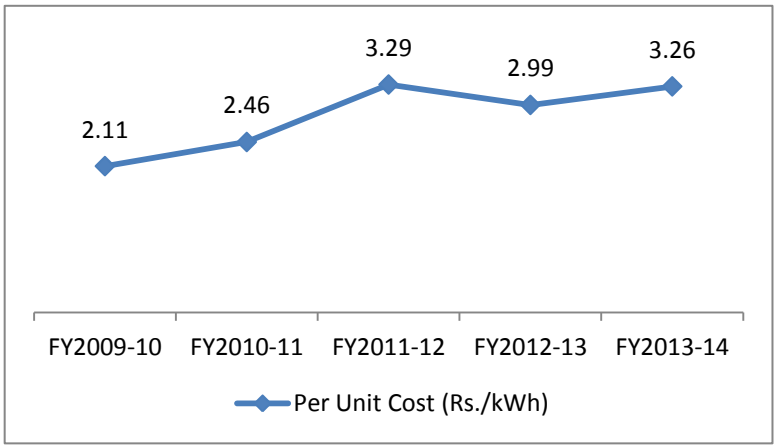




3.4 Power Purchase

3.4.1 EDP has been purchasing majority of its power from Central Generating Stations (CGS) as per the allocation given to them by the Central Sector Plants. Most of its power is from NTPC, NLC and NPCIL stations. EDP also purchases power from neighbouring states/utilities like TNEB and KSEB in small quantum as per their agreement.

Figure 15: Power Purchase Expenses for the past 5 Years



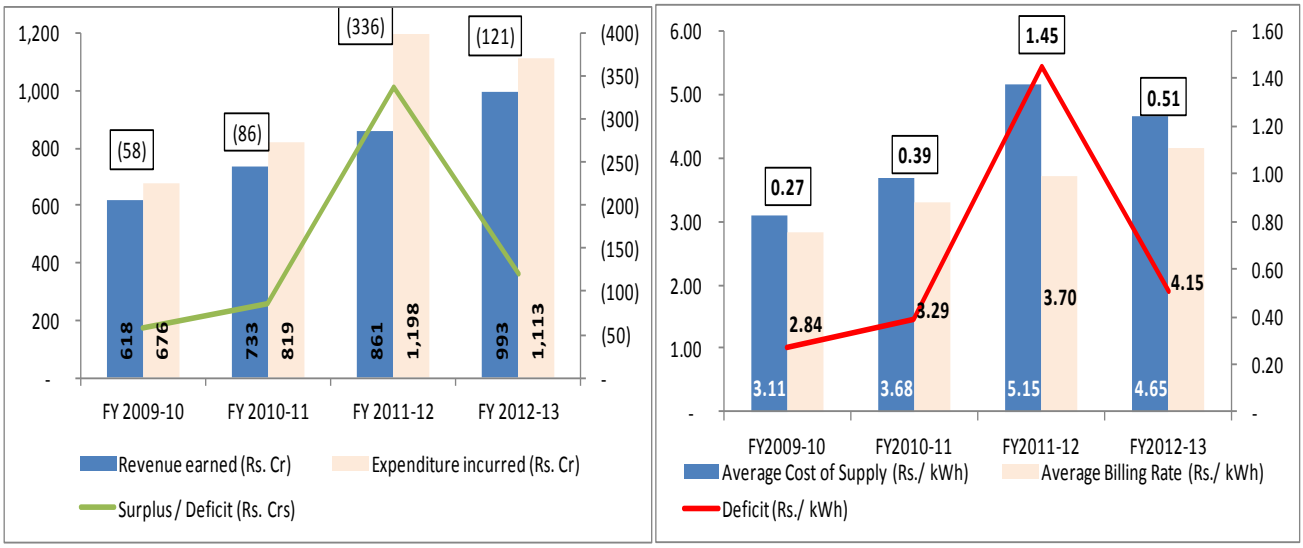
3.4.2 The figure depicts per unit rate of power purchase for EDP during last 5 years. The per unit cost of power purchased has been increasing over the years from Rs 2.14/ kWh to Rs 3.26/ kWh. There has been an increase of around 11.5% in the power purchase cost per unit in the last five years of operation. The spike in power purchase cost in FY 2011-12 is on account of payment of Rs. 143.58 Crs accruing to TANGEDCO whereby the matter was sub judice and the payment was made as per directions of the Hon'ble High Court. The significant increase in power purchase cost is mainly on account of huge dependence on external sources for purchase of power and the increase in fuel cost of generating stations.

3.4.3 Further due to network corridor constraints, utilities in the southern grid are unable to procure power from generating stations in North, which also amounts for higher power purchase cost.

3.5 Financial Gap/ Deficit

3.5.1 In the last few years EDP has been incurring losses and not able to recover the expenses and the following figure depicts the comparison of revenue earned versus the expenditure incurred and the comparison of average cost of supply versus the average billing rate during FY 2009-10 and FY 2012-13.

Figure 16: Past Financial Gap/ Deficit



3.5.2 From the figure above, it is inferred that there has always been an under recovery of expenses as compared to the expenses incurred by EDP to provide reliable and quality power supply to its consumers.

3.5.3 As seen from the figure above ACoS has increased from Rs. 3.11/ kWh in FY 2009-10 to Rs. 4.65/ kWh in FY 2012-13. The huge jump in cost of supply in FY 2011-12 to Rs. 5.15/ kWh is on account of payment of Rs. 143.58 Crs accruing to TANGEDCO and the expenses incurred in restoring the transmission and distribution network in the UT of Puducherry post cyclone Thane. In order to reduce the gap, commission has allowed the creation of regulatory assets and the same is being recovered from the consumers by way of surcharge over a period of 3 years.

CHAPTER 4. MARKET ASSESSMENT

In order to prepare a Business Plan, it is necessary to understand the market and diverse forces acting in the market. Market Assessment is broadly categorized into following:

1. Statutory and Regulatory Framework
2. Key Provisions
3. Market Issues and Challenges
4. Market Outlook

4.1 Statutory and Regulatory Framework

4.1.1 The Electricity Act, 2003, amended in the year 2007 was notified to:

"...consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and generally for taking measures conducive to development of electricity industry, promoting competition therein, protecting interest of customers and supply of electricity to all areas, rationalization of electricity tariff, ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies..."

4.1.2 Further, under Electricity Act, 2003, "Distribution" is a licensed activity to be regulated as per license conditions and licensing regulations that govern the distribution business. The Electricity Act, 2003 has bestowed numerous responsibilities for distribution on the Central Government, State Government and the State Electricity Regulatory Commissions (SERCs)/ Joint Electricity Regulatory Commission (JERC).

4.1.3 As per the Electricity Act, 2003, the Central Government has to prepare the National Electricity Policy, Plan and Tariff Policy for development of the power system. In line with this, the Central Government has notified the National Electricity Policy, 2005 which aims at laying guidelines for accelerated development of the power sector, providing supply of electricity to all areas and protecting interests of customers and other stake holders.

4.1.4 Likewise, National Tariff Policy (NTP) has also been notified and has laid down the following objectives:

- ✓ Ensure availability of electricity to customers at reasonable and competitive rates.
- ✓ Ensure financial viability of the sector and attract investments.

- ✓ Promote transparency, consistency and predictability in regulatory approaches across jurisdictions and minimize perceptions of regulatory risks.

4.1.5 The Electricity Act, 2003 states that the State Commissions shall be guided by the National Electricity Policy, National Electricity Plan and Tariff Policy in discharge of its functions.

4.1.6 Section 83 of the Electricity Act, 2003 refers to the constitution of Joint Commission and has been empowered to determine tariff for generation, supply, transmission and wheeling of electricity, wholesale, bulk or retail as the case may be within the constituent States and UTs and shall specify/ enforce standards with respect to quality, continuity and reliability of service by power distribution utility, in addition to discharge of such other functions as assigned to it under Electricity Act, 2003.

4.1.7 In exercise of the powers conferred by Section 83 of the Electricity Act, 2003 the Central Government constituted a two member (including Chairperson) Joint Electricity Regulatory Commission for all the Union Territories of India except Delhi. Later with the joining of the State of Goa, the commission came to be known as "Joint Electricity Regulatory Commission for the State of Goa and Union Territories (JERC)" as notified on May 30, 2008. The JERC started functioning with effect from August, 2008.

4.1.8 In discharge of its function, the JERC issued various rules and regulations applicable to the State of Goa and UTs. Some of the key regulations/polices issued by the JERC are outlined below:

Table 2: Key Regulation's for Electricity Department, Puducherry

Sr. No	Name of the Regulations
1	**JERC Conduct of Business Regulations, 2009** – Guidelines to power Sector utilities in the the State of Goa and UTs for undertaking various regulatory activities.
2	**JERC Appointment and Functioning of Ombudsman Regulations, 2009 and its amendment**- Guidelines to the distribution licensee in the State of Goa and UTs for appointment and functioning of Ombudsman.
3	**JERC Establishment of Forum for Redressal of Grievances of Consumers Regulations, 2009 and its amendment** – Guidelines to the distribution licensee in the State of Goa and UT for establishing forum for redressal of consumer grievances.
4	**JERC Treatment of Other Business of Transmission Licensees and Distribution Licensees Regulation, 2009 -** Guidelines for treatment of other business of the licensee in the State of Goa and UTs.
5	**JERC Standards of Performance Regulations, 2009** - Stipulates the standards of performance to be adhered by the distribution licensee

Sr. No	Name of the Regulations
6	**JERC Open Access in Transmission and Distribution Regulation, 2009 -** It is applicable for access to and use of the distribution system of distribution licensees
7	**JERC Terms and Conditions for Determination of Tariff Regulations, 2009** - Terms and conditions for determination of tariff for licensees and laying down the performance parameters
8	**JERC Electricity Supply Code Regulations, 2010 and its amendments -** Obligations of the distribution licensee and consumers vis-à-vis each other and set of practices that shall be adopted by distribution licensee to provide efficient, cost-effective and consumer friendly service to consumers.
9	**JERC Procurement of Renewable Energy Regulations, 2010 -** Regulations for the development of power generation from renewable energy sources and for procurement of energy from renewable sources by distribution licensee
10	**JERC (Multi Year Distribution Tariff Regulations), 2014 -** For determination of tariff from April 1, 2015 up to March 31, 2018.
11	**JERC Demand Side Management Regulations, 2014** - Guidelines for advancement and implementation of cost effective DSM initiatives in the State of Goa and UTs.

4.1.9 The power sector in the UT is being regulated based on the above outlined regulations and the same has also brought in an element of regulatory certainty as envisaged in Electricity Act, 2003. As mentioned previously, the above mentioned enactments have had an impact on the sector at the national as well as the state level.

4.1.10 Thus, it can be observed that a number of path breaking initiatives have been taken in the recent past in terms of policy pronouncements to revamp the power system. The unleashing of the non-discriminatory open access to the transmission system will have a positive impact on wheeling of power from power surplus states to deficit areas. The generators are in a position to sell their power anywhere in the grid now. On the threat of climate change, there is a need to look at renewable energy as an option for generation on a large scale. Thus the enablers for growth have been put in place to a large extent which will enable growth of the sector in the coming time.

4.2 Key Provisions

4.2.1 The key provisions of the Electricity Act, 2003 and other policy enablers which have thrown up opportunities as well as challenges to EDP are:

- ✓ Introduction of Open Access
- ✓ Renewable Purchase Obligation
- ✓ Multi-year Tariff Regime

4.2.2 While there a number of enablers in the environment for growth opportunities, there are also challenges that would need to be analysed, along with the inherent strengths and weakness of EDP to consider the future outlook of the Electricity Department.

4.3 Market issues and challenges

4.3.1 ***Open Access –*** The concept of open access in the electricity sector was introduced in the Electricity Act, 2003 with a view to promoting competition and providing the consumers a choice and was perceived as a critical feature of power market development and competition. As per Electricity Act 2003 and JERC Regulations, it has been mandated to distribution licensee to implement non-discriminatory open access, resulting in loss of subsidising category of consumers. The current class of HT consumers who intend to source electricity under the open access route are the subsidizing consumers for the licensee, as and when such consumer avails open access, the distribution licensee encounters an instantaneous revenue shortfall. However, by identifying cross subsidy surcharge and additional surcharge, on account of laying wire network and related infrastructure to supply electricity to the consumer, the prospective open access applicant would share the burden of cross subsidy that is built into his tariff with the distribution licensee.

4.3.2 EDP submits that the distribution entities have heavy responsibility to meet the needs of small domestic consumers at a lower rate than the average cost. Currently the HT consumers and commercial consumers are paying a higher tariff than the domestic consumers and thereby cross subsidizing and providing the means to supply power at lower rates to cross subsidized consumers i.e. domestic consumers. If such high paying consumers walk away from grid supply, average tariff will have to be increased further. The successful implementation of open access would depend on the situation regarding relative tariff of the different consumers, the possible rates of growth of category wise consumption and the potential for purchasing additional power at low rates in the future.

4.3.3 Further, Ministry of Power has issued the opinion from Ministry of Law & Justice in the matter of operationalization of open access in power sector that, “All 1 MW and above consumers are deemed to be Open Access consumers and that the regulator has no jurisdiction over fixing the energy charges for them”. Further, the Ministry of Law & Justice has also requested to take the necessary steps for implementing the provisions related to open access in Electricity Act, 2003. Earlier, Ministry of Power had taken a stand of making this arrangement as a ‘choice’ rather than ‘mandatory’.

4.3.4 EDP relies almost entirely (~94% of its power requirement) on power allocation from Central Generating Stations and state utilities of neighbouring States (Kerala and Tamil Nadu). The power from Puducherry Power Corporation Limited (32.5 MW) is used to meet ~45% of power requirement of Karaikal region. So, EDP is vulnerable to changes in allocation of power from the central pool.

4.3.5 ***Tariff Design under MYT Regime –*** With the Ministry of Power's notification for 1 MW and subsequent discussion paper by Forum of Regulators (FOR) on implementation of the same, most state regulators have started proceedings to consider stakeholder's view. In such a scenario, implementation/ designing of retail tariffs under MYT Regime becomes a challenge. There is an element of doubt that under MYT regime will the commission determine tariffs for entire control period with variation being allowed in FPPCA and utility on a periodic basis approaches for truing-up purposes. However considering the progress in other states that have already commenced MYT, EDP understands that the retail tariffs for ensuing year would be approved by the Commission every year and there would be true-up and performance review as well.

4.3.6 EDP also understands that MYT regime is introduced so that utilities are rewarded for performance and there is accuracy in projections.

4.3.7 ***Renewable Purchase Obligation –*** The Electricity Act, 2003, mandates the State Electricity Regulatory Commissions to promote cogeneration and generation from renewable energy sources by providing suitable measures for connectivity with the grid.

4.3.8 In this regard, the Commission has passed the regulation for development of power generation from renewable energy sources and for procurement of energy from renewable sources by distribution licensee. However there is an issue of availability of renewable energy and despite the efforts of EDP, it has not been able to arrange for solar and non-solar power. This clearly indicates that there is shortage of renewable energy generation in the UT and the department has to resort to purchase of RECs to comply with Renewable Purchase Obligation (RPO).

4.3.9 EDP submits most of the SERCs have mandated RPO in an increasing trend considering there would be corresponding increase in renewable energy generation. However most of the utilities are unable to meet RPO requirement by way of renewable energy generation due to inadequate renewable potential within the licensee area and are required to purchase RECs, which is proving to be a costly

proposition. EDP too is facing the same issues.

4.3.10 ***Reduction of Cross Subsidy –*** With the enactment of Electricity Act 2003 and various policy initiatives thereof, the utilities need to gradually reduce the cross subsidy and move the tariffs towards +/- 20% of the "Cost of Supply". Traditionally, in the Indian context, tariffs for domestic and agricultural consumers have been heavily subsidised either by the state through subsidies and subventions or through cross subsidisation by other consumer categories, primarily the consumers using electricity at high voltages.

4.3.11 As per Section 61 (g) of Electricity Act, 2003,

"The tariff progressively reflects the cost of supply of electricity and also, reduces and eliminates cross-subsidies within the period to be specified by the Appropriate Commission."

4.3.12 Therefore a Roadmap is required to achieve the objective of the Electricity Act and National Tariff Policy to achieve the tariff within the range of +/- 20% of "Average Cost of Supply". Accordingly, EDP has considered this issue and will try to achieve the tariff within the specified range by undertaking all the operational, commercial and technical measures.

4.4 Market Outlook

4.4.1 Power Distribution reforms are widely viewed as fundamental to improving commercial performance and financial viability of the power sector in India. Reforms in Distribution sector post Electricity Act, 2003 have been slow but are definitely and surely happening. As per the recently released World Bank report titled "More power to India - the challenge of electricity distribution", the Electricity Act, 2003 and associated policies constitute an enabling policy and regulatory framework for the sector's development—the focus now must be on implementation.

4.4.2 The primary focus of these reforms have been to improve the efficiencies in the Power Distribution Sector and various model have been tried towards this end such as privatisation model, distribution franchisee model, APDRP schemes etc.

4.4.3 Competition has been introduced in the power distribution sector through distribution open access, parallel licensing and proposed separation of carriage and content in distribution. Considering the availability of power expected to improve over next five years in the country, efficiencies and demand management for distribution utilities and open access will start becoming the key drivers in the Power

Distribution Sector.

4.4.4 With respect to EDP, its license area is quite different from the other distribution areas in the country, in terms of sourcing power almost entirely from CGS, supplying quality and uninterrupted power and having low distribution losses in the system. Considering the fact that EDP is bound for significant reforms in the distribution segment with introduction of MYT regime, demand side management initiatives, promotion of renewable power and smart grid pilot project, the future of power sector in UT of Puducherry looks optimistic.

CHAPTER 5. DEMAND & SALES ASSESSMENT

Demand and sales assessment is one of the most important aspects of the distribution business. There are many statistical approaches to project the demand and sales for the future years including the crudest form of CAGR method to the most advanced form of end use survey approach. In fact, CEA has been using partial end use method to project demand in different states. However, the technique adopted is mainly dependent of the kind of data that is available, nature of consumption and size of customer category.

Further, Demand and Sales Assessment is not a one-time exercise but needs to be constantly monitored against actual demand and updated for any major development or changes in other external drivers like policies, regulatory developments, industrial growth, changes in specific industry segments etc.

5.1 Regulatory Provisions for Sales Forecast

5.1.1 The Commission in the Regulation 5 of JERC (Multi Year Tariff) Regulations, 2014 has mentioned of business plan and in Regulation 15 and 16 mentioned of metered and un-metered sales forecast. The relevant provisions of the JERC MYT Tariff Regulations, 2014 are extracted for reference as under:

"15.1 Forecasting Methodology

Metered sales shall be treated as an uncontrollable parameter:

Provided that open access transactions shall not form part of the sales:

Provided further that sales forecast shall be based on past trends in each of the slabs of consumer categories. The compounded annual growth rate (CAGR) of past 2 to 3 years of sales within each of the slabs of a consumer category as per audited books of account shall be used to forecast up to short and medium (5 years) time range.

Provided also that in cases where slab-wise sales to each consumer category are not available in audited books of accounts and only consolidated sales are available, the Distribution Licensee shall include the slab-wise sales in annexure to its Annual Report from next year onwards:

Provided also that if Audited books of accounts are not available, the Distribution Licensee shall get the accounts audited within a year of roll out of these tariff regulations so as to ensure that audited sales figures, by slab by consumer

category, for last three preceding years are available for sales estimation from next year onwards.

16 Un-metered Sales Forecast

Methodology for determination of un-metered sales

16.2 The Central Electricity Authority issued CEA (installation and operation of meters), Regulations 2006. However in some utilities under the jurisdiction of JERC 100% metering has not yet taken place. Till such time 100% metering is achieved, the energy sales to unmetered consumers shall be considered on normative and it will be a controllable parameter."

5.2 Approach for Sales Forecast for Control Period

5.2.1 The petitioner has adopted the methodology mentioned by the commission and has taken the compounded annual growth rate (CAGR) of past 3 years of sales of each consumer category as per actual audited sales and has forecasted the sales for the control period FY2015-FY2018.

5.2.2 As the audited book of accounts of last year (FY2013-14) is in the process of preparation, the corresponding sales figures pertaining to FY2010-11, FY2011-12, FY2012-13 has been used for sales projection.

5.3 Sales Projections

5.3.1 Based on the past sales, the category wise growth rates for the past audited year (FY 2011 to FY 2013) and considered CAGR for the sales projections for the control period is given in the table below.

Table 3: Summary of Category-wise Growth Rate Considered for Projections

No. of Consumers		
Consumer Category	**CAGR FY11 to FY13**	**Growth rate considered**
Domestic	4.41%	4.41%
Hut services	0.00%	0.00%
Commercial	3.57%	3.57%
Agriculture (HP)	0.36%	0.00%
Street lighting	0.33%	0.33%
LT Industrial	1.35%	3.00%
Water tanks	21.06%	3.00%
HT Industrial	3.12%	3.12%
HT Govt. Esta.	4.76%	4.76%
HT EHT Industrial	0.00%	0.00%

Sales		
Consumer Category	**CAGR FY11 to FY13**	**Growth rate considered**
Domestic	6.92%	6.92%
Hut services	0.00%	0.00%
Commercial	8.00%	8.00%
Agriculture (HP)	0.00%	0.00%
Street lighting	12.36%	5.00%
LT Industrial	11.47%	7.00%
Water tanks	25.03%	5.00%
HT Industrial	0.48%	7.00%
HT Govt. Esta.	14.16%	6.00%
HT EHT Industrial	19.41%	6.00%

5.3.2 ***Domestic Consumers:***

With the advent of technology and increasing purchasing power the lifestyle of the people in Puducherry has changed a lot and is more urbanised. The usage of electrical appliances in the households such as television, air conditioners, fans, washing machines, microwave ovens, computers, laptops, geysers/ electric water heaters, mixers, multiple mobile charging units etc have increased and is now common in every household. Thus the consumption and load of most of the households has increased. Multi-storeyed apartments / buildings are being developed with 2- 3 BHK flats which again will have much increased load and consumption. Hence, the growth rate of 6.92% in consumption based on the CAGR of 6.92% for FY2010-11 to FY2012-13 is considered for projection for the MYT control period. The number of consumers is expected to grow at a CAGR of 4.41% for the control period.

5.3.3 ***Hut Services/ OHOB Consumers:***

The consumption and the number of consumers in the one house one bulb (OHOB) category is not expected to grow as EDP plans on giving no new OHOB connections. So the consumption and the number of consumers are kept the same for the MYT control period which is also in line with the calculation as considered by the Hon'ble Commission in the past tariff orders.

5.3.4 ***Commercial Consumers:***

Puducherry, being a tourist destination, is expected to attract tourists in the coming years as per the continuing trend and to cater to their demand more hotels, restaurants, shops and commercial establishments are expected to come up in near future. Based on the CAGR of number of consumers of the last three audited years a growth rate of 3.57% is considered for the MYT control period and the consumption is projected to grow at a rate of 8% during the same period.

5.3.5 ***Agriculture Consumers:***

It is expected that the consumption of this category to remain stagnant as it has remained in the past years. Therefore the consumption and the number of consumers are kept the same as approved by the commission for FY2014-15 for the MYT control period.

5.3.6 ***Street Lighting:***

The street lighting consumption has grown at a CAGR of 12.36% but petitioner expects that the street lighting consumption may grow at a rate of not more than 5% as EDP plans on introducing energy efficient street (LED) lighting by replacing the

older 250W sodium vapour lamps in city main roads. Inspite of this it is anticipated a growth rate of 5% is considered for sales projections for the control period due to huge conversions of 40W tubelights to 250W/ 150W sodium vapour lamps. The number of consumers is projected to grow at rate of 0.33% based on the CAGR of last three audited years.

5.3.7 *LT Industrial and Water Tanks:*

The LT industrial consumers are expected to grow at a rate of 3% against the CAGR of 1.35% during the last three audited years. In the same way the consumption is expected to grow at 7% during the MYT control period.

Table 4: Consumers and Sales of LT Industrial and Water Tank

No. of consumers		
	CAGR (%)	Growth rate considered (%)
LT Industrial	1.35	3
Water tanks	21.06	3

Sales		
	CAGR (%)	Growth rate considered (%)
LT Industrial	11.47	7
Water tanks	25.03	5

The huge jump in growth rate of consumption by water tanks is due to energisation of a large number of water tanks build by PWD, Puducherry in FY 2011-12. But this trend in growth rate is a one-time event and is neither practically required nor expected to sustain over the years. Therefore, growth rate considered for water tanks in terms of number of consumers is 3% and 5% in terms of consumption.

5.3.8 *HT-1 (Industrial)*

Due to economic slowdown in the country, most of the sectors have taken a hit and the consumption over the last couple of years by industries have decreased due to shutdown of few plants and running of plants at low operational levels. Considering the present economic condition and the positive sentiment in the country post election of new government, the situation is expected to improve over the next few years. So the petitioner has considered the growth rate of 3.12 % in the number of consumers and a growth rate of 7% in case of consumption against a CAGR of 0.48% in the last three audited years.

5.3.9 *HT-2 (State and Central Govt. Establishments)*

The HT-2 category of consumers is expected to grow at a rate of 4.76% based on the CAGR of last three audited years. The consumption in this category is expected to grow with the infrastructure development such as water works and sewage treatment plants. So a growth rate of 6% is considered for this category of consumer.

5.3.10 ***HT-3 (Industrial Extra High Tension)***

Considering the present economic situations, the petitioner on a conservative approach has assumed 1 no of consumer to be added to the system during the control period and the growth in consumption is expected to grow at 6% against the CAGR of 19.41% (FY2010-11 to FY2012-13).

5.3.11 Based on the above assumptions of growth rate, the projection for the sales/ consumption and number of consumers during the control period is given below.

Table 5: Projection of Number of Consumers for the MYT Control Period

Consumer Category	Approved	Projections		
	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Domestic	268500	280350	292724	305643
Hut services	35500	35500	35500	35500
Commercial	45500	47126	48809	50553
Agriculture (HP)	6888	6888	6888	6888
Street lighting	49500	49663	49827	49991
LT Industrial	6265	6453	6647	6846
Water tanks	85	88	90	93
HT Industrial	411	424	437	451
HT Govt. Esta.	49	51	54	56
HT EHT Industrial	9	9	10	10
Total	**412707**	**426677**	**441246**	**456438**

Table 6: Projection of Consumption during the MYT Control Period

Consumer Category	Approved	Projections		
	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Domestic	610.6	652.8	698.0	746.4
Hut services	10.0	10.0	10.0	10.0
Commercial	179.4	193.7	209.2	225.9
Agriculture (HP)	56.6	56.6	56.6	56.6
Street lighting	29.2	30.6	32.1	33.7
LT Industrial	220.5	236.0	252.5	270.2
Water tanks	51.0	53.6	56.2	59.0
Temporary Supply	20.0	21.0	22.1	23.2
HT Industrial	929.3	994.3	1063.9	1138.4
HT Govt. Esta.	50.0	53.0	56.2	59.6
HT EHT Industrial	345.6	366.3	388.3	411.6
Total	**2502.1**	**2667.9**	**2845.2**	**3034.6**

5.3.12 Based on the above projections of the growth rate for the respective categories, the overall sales during the control period are expected to grow at a CAGR of 3.38%.

5.4 Energy Requirement

5.4.1 The projection for demand has been arrived by grossing up the above consumption projections with distribution loss trajectory proposed by EDP. Considering the optimal distribution loss levels of EDP, it finds it technically difficult to further reduce the transmission and distribution loss. Efforts are being taken to reduce these losses further and in line with that a 0.25% reduction in losses every year is considered for the control period.

5.4.2 The proposed distribution loss reduction trajectory proposed by EDP for the control period is mentioned below.

Table 7: Distribution Loss Reduction (%) Trajectory for the Control Period

	FY 2015-16	FY 2016-17	FY 2017-18
Distribution loss (%)	11.75%	11.50%	11.25%

5.4.3 EDP is implementing DSM based efficient lighting programme (DELP) under demand side management programme in the UT of Puducherry along with Energy Efficiency Services Limited (EESL). The proposed energy savings based on energy efficiency/ DSM measures undertaken by EDP for the control period is mentioned below.

Table 8: Energy Savings Under DELP During the Control Period

	FY 2015-16	FY 2016-17	FY 2017-18
Energy Savings under DELP (MUs)	49	49	49

5.4.4 The petitioner requests the Hon'ble Commission to approve the proposed energy balance for the control period based on the above projections.

Table 9: Energy Balance for the MYT Control Period

Sr. No.	Item	Projections		
		FY 2015-16	FY 2016-17	FY 2017-18
1	Metered Sales (MUs)	2601	2779	2968
2	Unmetered Sales (MUs)	67	67	67
A	**Total Sales within the UT (MUs)**	2668	2845	3035
3	Savings under DELP Scheme (MUs)	49	49	49
B	**Total Sales after considering DSM measures (MUs)**	2619	2796	2986
4	Loss(%)	11.75%	11.50%	11.25%
5	Loss (MUs)	300	314	330
6	Sales- UI/ Export to Exchange (MUs)	0	0	0
C	**Total Energy Requirement (MUs)**	2919	3111	3315

CHAPTER 6. POWER PURCHASE PLAN

The petitioner has to arrange the power requirement of its distribution license area. In the previous section the projected sales and the demand requirement for the license area has been arrived at and based on the same, the power requirement for the control period has been discussed in this section.

6.1 Power Purchase Plan

6.1.1 In this section, the petitioner has presented the total power purchase cost arising out of the power procurement plan being proposed for the control period. The power requirement for the control period would be met from the following sources:

- Central Generating Stations
- PPCL
- TNEB & KSEB

6.1.2 For estimating the power purchase cost for the control period, merit order principles have been considered. While full fixed (capacity) charges have been considered and the variable charges corresponding to the cheaper sources of power have been considered, whereas no variable charges have been considered in respect of energy not considered for power purchase (according to the merit order dispatch principles).

6.1.3 Following assumptions have been considered for projecting the quantum and cost of power purchase:

6.1.3.1 ***Share Allocation:*** The petitioner has considered the firm allocation and allocation from the unallocated quota from the above stations as per the notification of the Southern Region Power Committee vide SRPC Order No:SRPC/SE-I/54/UA/2014 dated 30.05.2014, effective from 00:00 Hrs of 30-01-2014. Refer Annexure 7.

6.1.3.2 ***Fixed Charges:*** The Tariff Regulations for the tariff period FY 2014-19 have recently been notified by CERC. However, CERC has not issued the tariff orders for the FY 2014-15 for the central generating stations based on the new regulations. In absence of the tariff orders for FY 2014-15 of the central generating stations, the petitioner has considered the Annual Fixed Charges of FY 2013-14 for purpose of estimation of the fixed charges for the control period with an escalation of 4% on the FY 2014-15 cost approved by the commission based on the same principles.

6.1.3.3 ***Variable Charges:*** The petitioner has considered the actual average variable cost of the first five months of FY 2014-15 for consideration of per unit variable charges for various plants for FY2014-15 and has escalated the cost by 5% y-o-y during the control period. For nuclear plants, Madras APS and Kaiga the unit rate of Rs 2.03/ kWh and Rs 2.98/ kWh has been considered and the same has been escalated by 5% every year.

For TNEB, the present applicable tariff of Rs 3.47/unit has been considered for FY 2014-15 and the same has been escalated by 5% y-o-y. For KSEB, the present applicable tariff of Rs. 4.45/ unit has been considered for FY 2014-15 and escalated at 5%. For PPCL, the average variable cost of Rs. 2.90/ kWh (for first five months of FY 2014-15) has been considered and escalated at 5% for the control period. For NTECL Vallur, the average rate of Rs. 1.96/ kWh has been considered and escalated at 5% for the control period.

6.1.3.4 The Petitioner has considered the nuclear plants, as must run and has not subjected them to merit order dispatch. Also, TNEB (Karaikal), KSEB and PPCL have been considered as must run and not subject to merit order principles.

6.1.3.5 For determining the power purchase cost, merit order dispatch principles have been applied. The must-run stations have been assumed at the top of the merit order and variable cost incurred for meeting the energy requirement within the UT has been calculated from the plants at the top of the merit order.

6.1.3.6 Fixed Charges from all the generating stations (irrespective of the merit order) have been considered for arriving at the power purchase cost.

6.1.3.7 ***UI Over-drawal/ Under-drawal:*** As per the merit order principles adopted for estimating the energy requirement for the control period, no surplus sale of power has been considered for the control period and power purchase corresponding to meeting the requirement. The UI over-drawal has not been considered for the control period. Further, the UI over-drawal/ under-drawal quantum and amount would be submitted at the time of true-up based on the actual performance during the year based on the actual UI bills.

6.1.3.8 ***PGCIL losses:*** Losses have been assumed at 5% and at 4% for TNEB. For PPCL and KSEB the external losses have been considered as nil as they are within the periphery of the licensee area.

6.1.3.9 ***Transmission Charges:*** *The petitioner has considered the transmission charges*

approved by the commission for FY2014-15 and has accordingly calculated the transmission charges per unit for PGCIL and has escalated the same by 5% y-o-y. For POSOCO and PCKL the FY 2014-15 charges have been escalated by 5% y-o-y for the control period.

6.2 Renewable Purchase Obligations

6.2.1 As per JERC (Procurement of Renewable Energy) Regulations, 2010 clause 1 sub clause (1):

''Each distribution licensee shall purchase electricity (in kWh) from renewable energy sources, at a defined minimum percentage of the total consumption of all the consumers in its area during a year.''

6.2.2 The RPO requirements as per the draft amendments to JERC (Procurement of Renewable Energy) Regulations, 2014 has been considered for the control period.

6.2.3 The Petitioner has to purchase a certain percentage of total energy purchase for sale to the consumers in its area from renewable energy sources with specific solar and non-solar RPO content.

The RPO obligation for the control period has been considered assuming the fulfillment of RPO obligation through the purchase of REC certificates. The petitioner has considered the amount corresponding to the prevailing floor price of REC certificates, as per the latest CERC order dated August 23' 2011. The Solar REC trading price of Rs. 9300/ REC and non-solar trading price of Rs. 1500/ REC has been considered for estimation of RPO compliance cost..

6.2.4 The RPO compliance cost for the control period is shown below.

Table 10: RPO Compliance Cost

Sr No	Particulars	Projections		
		FY 2015-16	FY 2016-17	FY 2017-18
A	**Sales (Mus)**	2,668	2,845	3,035
B	**Percentage (%)**	**3.55%**	**3.95%**	**4.30%**
1	Solar	0.85%	1.15%	1.50%
2	Non Solar	2.70%	2.80%	2.80%
C	**Million Units**	94.71	112.38	130.49
1	Solar	22.68	32.72	45.52
2	Non Solar	72.03	79.66	84.97
D	**Rate/kWh**			
1	Solar	9.30	9.30	9.30
2	Non Solar	1.50	1.50	1.50
E	**Cost (Rs. Crs)**			
1	Solar	21.09	30.43	42.33
2	Non Solar	10.81	11.95	12.75
F	**Total Cost (Rs. Crs)**	**31.90**	**42.38**	**55.08**

6.2.5 The petitioner would like to bring to the notice of the Commission that in respect of the obligation for purchase of solar energy, EDP plans to purchase the energy generated from the following solar PV projects envisaged to be setup under various Government/ private/ NGO sectors, to meet its RPO under solar category.

- EDP has confirmed its willingness to avail power to the extent of 10 MW of solar power, allocated by MNRE under Phase 2 Batch-I of JNNSM at a levelised tariff of Rs. 5.50/ kWh.
- Two number of PSU's namely Pondicherry Co-op Spinning Mills and Pondicherry State Co-op Sugar Mill have proposed to setup grid connected solar PV plants in their factory premises of capacities 4MW and 5MW respectively with the support of EESL and SECI.
- EDP has given its consent to purchase the entire power generated from the solar PV power plant of capacity 5 MW proposed to be set-up at Karaikal, by PPCL.
- Considering the vast potential for setting up of solar PV pants in the UT of Puducherry, EDP has planned to set-up its own ground mounted solar PV plants of capacity 1 MW each at five locations (four in Puducherry region and one in Yanam region) with technical support of SECI during FY2015-16. Further the department also plans to set-up roof-top solar PV plants on the roofs of high rise Government buildings with an aggregated capacity of ~5 MW during FY2016-17.

6.2.6 EDP has not considered the quantum and the cost of purchase of power from these plants as these are still at nascent stage. The purchase of power from these plants will be included in the ARRs of the subsequent years, once the plants commission and start supplying power to EDP.

6.2.7 The Petitioner requests Hon'ble Commission to approve the purchase of RECs and the request as discussed above for the purpose of meeting the RPO requirement for the control period.

6.2.8 The petitioner requests the Hon'ble Commission to approve the total quantum and cost of power purchase for the control period based on merit order principles as summarised below.

Table 11: Quantum and Cost of Power Purchase for the MYT Control Period

Sr. No.	Source	Capacity (MW)	Firm allocation to Licensee		Avail. / PLF (in %)	Purchase (MU)			Variable Cost (Rs./ kWh)			Fixed Cost (Rs. Cr)			Total Cost (Rs. Cr)		
			%	MW		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
A	**Central Sector Power Stations**																
I	**NTPC**	**5,600**				**1,199**	**1,185**	**1,391**	**9.39**	**9.86**	**10.36**	**103.27**	**107.40**	**111.70**	**363.84**	**377.04**	**454.86**
	RSTPS Stage I & II	2,100	4.47	94	85.00	654	654	654	2.53	2.66	2.79	44.52	46.30	48.16	210.12	220.18	230.72
	RSTPS Stage -III	500	4.74	24	85.00	87	73	165	2.63	2.76	2.90	17.12	17.80	18.52	40.04	37.92	66.42
	Talcher Stage- II	2,000	3.44	69	85.00	458	458	458	1.57	1.65	1.73	21.26	22.11	22.99	93.31	97.76	102.43
	Simhadri Stage- II	1,000	1.67	17	85.00	-	-	114	2.65	2.79	2.93	20.37	21.19	22.04	20.37	21.19	55.29
II	**NLC**	**2,390**				**755**	**860**	**860**	**8.99**	**9.44**	**9.92**	**66.01**	**86.04**	**89.48**	**236.69**	**290.22**	**303.87**
	NLC TPS II Stage I	630	12.09	76	75.00	440	440	440	2.28	2.39	2.51	35.84	37.27	38.76	136.15	142.60	149.36
	NLC TPS II Stage II	840	3.53	30	85.00	199	199	199	2.28	2.39	2.51	13.20	13.73	14.27	58.46	61.25	64.18
	NLC TPS I (Expn)	420	4.06	17	85.00	116	116	116	2.16	2.27	2.38	16.97	17.65	18.36	42.07	44.01	46.03
	NLC TPS II (Expn)	500	3.53	18	75.00	-	104	104	2.28	2.39	2.51	-	17.39	18.09	-	42.36	44.30
III	**NPCIL**					**342**	**445**	**445**				-	-	-	**102.79**	**141.70**	**148.79**
	MAPS	440	1.82	8	69.00	44	44	44	2.13	2.24	2.35	-	-	-	9.27	9.74	10.22
	KAPS Stage I U1&2	440	4.32	19	69.00	103	103	103	3.13	3.29	3.45	-	-	-	32.39	34.01	35.72
	KAPS Stage I U3&4	440	3.86	17	69.00	92	92	92	3.13	3.29	3.45	-	-	-	28.95	30.39	31.91
	Kudankulam	1,000	3.78	38	69.00	103	206	206	3.13	3.29	3.45	-	-	-	32.17	67.56	70.94
IV	**Others**					**529**	**538**	**547**				**30.92**	**32.15**	**33.44**	**159.72**	**170.85**	**225.49**
	TNEB (Pondy)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TNEB (Karaikal)	-	-	-	-	300	309	319	3.64	3.83	4.02	-	-	-	109.42	118.34	127.98
	Vallur Thermal Project	1,000	1.70	17	85.00	118	118	118	2.06	2.16	2.27	19.75	20.54	21.36	19.75	20.54	48.19
	Tuticorin NLC project	1,000	1.00	10	85.00	69	69	69	2.10	2.21	2.32	11.17	11.62	12.08	11.17	11.62	27.94
	KSEB	-	-	-	-	41	41	41	4.67	4.91	5.15	-	-	-	19.39	20.36	21.37
B	**Within State Generations**																
I	**PPCL**	**33**	**100.00**	**33**	**85.00**	**230**	**230**	**230**	**3.05**	**3.20**	**3.36**	**26.09**	**27.14**	**28.22**	**96.16**	**100.70**	**105.47**
C	**Other Charges**														**73.78**	**82.48**	**86.83**
	PGCIL Transmission Charges, Wheeling & Other Charges														71.78	80.39	84.63
	POSOCO														1.05	1.10	1.16
	PCKL														0.95	0.99	1.04
															-	-	-
D	**RPO Compliance Cost**														**31.90**	**42.38**	**55.08**
															-	-	-
D	**Total**					**3,055**	**3,257**	**3,472**							**1,064.87**	**1,205.38**	**1,380.39**

CHAPTER 7. CAPITAL EXPENDITURE

The distribution network of EDP is old and it has been continuously upgrading and strengthening its network to cater quality and reliable power services to its increasing consumer base.

The distribution network of EDP needs to be developed and strengthened in such a way that demand of such rising consumers can be met. The majority of the capital expenditure during the control period is required to address this demand requirement. This section discusses the scheme wise capital expenditure and funding of the same to be carried out by EDP for the MYT control period.

7.1 Details of Capital Expenditure

7.1.1 EDP plans to carry out the capital expenditure during the control period for augmentation and expansion of its capacity and to reduce the transmission and distribution loss in the system. The works to be carried out are with an intention to maintain a reliable and efficient system.

7.1.2 The following are the proposed capital expenditure to be carried out in the upcoming years of the control period.

Table 12: Proposed Capital Expenditure for Control Period

Sr. No.	Particulars	FY 2015-16	FY 2016-17	FY 2017-18
A	**Transmission Schemes**		**Rs. Crs**	
1	Establishment of New Substations	65.35	65.35	68.95
2	Laying of New Lines	18.00	18.00	24.00
3	Augmentation of System Capacity	10.79	10.79	14.00
4	Renovation and Mordenization Works of Existing Capacity	14.10	14.10	15.80
5	Replacement of Capacitor Banks	1.50	1.50	2.00
6	Land Acquisition	3.17	3.17	-
7	Erection/ establishment/ upgradation of 230kV and 110kV Substations	18.69	19.62	20.61
	Total Transmission	**131.60**	**132.53**	**145.35**
B	**Distribution Schemes**		**Rs. Crs**	
1	R-APDRP Part-A Works	4.81	4.81	-
2	R-APDRP Part-B Works	35.34	35.34	-
3	System Improvement Schemes	7.20	7.80	8.00
4	Development Schemes	9.85	10.35	10.50
5	Rural Electrification (BNP)	0.70	0.75	0.80
6	100% Metering Programme	3.60	3.75	4.00
7	Conversion of HT Overhead lines into UG cables	4.32	4.54	4.77
	Total Distribution	**65.82**	**67.34**	**28.07**
	Total Capital Expenditure	**197.42**	**199.87**	**173.42**

7.1.3 Detailed scheme wise capital expenditure is given in Annexure 4, Annexure 5 and Annexure 6.

7.1.4 As seen from the table, majority of the capital expenditure is diverted towards establishment of new substations and system strengthening under R-APDRP works. Also significant amount of capital expenditure is towards renovation and modernization / augmentation of system capacity. The proposed capital expenditure will definitely be helpful to achieve the loss targets set by EDP in its distribution loss trajectory and to meet any additional load surging due to increase in demand.

7.2 R-APDRP Schemes

7.2.1 The Ministry of Power/ Government of India, in its 11th five year plan had launched the Restructured APDRP scheme. The objective of the Restructured APDRP Scheme is to provide quality and reliable power supply to the consumers and to bring down the AT&C losses.

7.2.2 Restructured Accelerated Power Development and Reforms Programme (R-APDRP) focuses on:

- ✓ Actual demonstrable performance in loss reduction;
- ✓ Establishment of reliable and automated systems for sustained collection of accurate base line Data and
- ✓ Adoption of information Technology in the areas of Accounting and auditing which will enable objective evaluation of the programme of utility before and after Implementation of the programme.

7.2.3 It is a centrally sponsored scheme. Under the programme, the Government of India has sanctioned projects that aim at establishment of reliable and automated systems for sustained collection of accurate base line data and the adoption of information technology in the area of energy accounting. The Power Finance Corporation has been nominated as the nodal agency to make the above program operational.

7.2.4 The project is being carried out in two parts where

PART A: will cover preparation of base-line data for the project area covering consumer indexing, GIS mapping, metering of distribution transformers and feeders and automatic data logging for all distribution transformers and feeders. It will also include adoption of IT applications for meter reading, billing and collection, energy accounting and auditing.

PART B: covers renovation, modernisation and strengthening of 11kV Sub Station and distribution systems.

7.2.5 Puducherry will be sharing Data Centre and Data Recovery Centre with Tamil Nadu as suggested by PFC and has appointed M/s ITI, Bangalore in consortium with M/s Navayuga Infotech Pvt. Ltd as the IT implementing agency (ITIA).

7.2.6 EDP has proposed to carry out a detailed study of the existing network for evolving DPR for works covered under Part-B scheme through consultant. DPR for part-B for Puducherry town has been submitted to PFC.

7.2.7 CPRI, Bangalore has been appointed as SCADA/ DMS consultant (SDC) and the DPR for SCADA/DMS has been submitted to PFC.

7.3 Funding of Capital Expenditure

7.3.1 EDP plans on funding majority of its capital expenditure through loan from Japan International Co-Operation Agency (JICA). The works carried out under R-APDRP (Part A&B) is funded by Power Finance Corporation.

7.3.2 ***Loan from JICA:*** EDP is in the process of availing the proposed JICA loan at the earliest to carry out significant improvement in the transmission and distribution system in the UT of Puducherry.

7.3.3 Snapshot of the proposed JICA loan:

- A cost estimate for executing various transmission and distribution works amounting to Rs. 700 Cr.
- The cost of works in the transmission system is estimated at Rs. 264.00 Cr primarily focusing on provision of new substations, augmentation of substations, renovation and modernization of existing substations including new transmission lines, EHV cable system and capacitor banks.
- The works for distribution system strengthening is estimated at Rs. 436 Cr covering provision of new HT Feeders, HT and LT cables, high voltage distribution system (HVDS), automatic power factor controller (APFC panels) in distribution transformer's (DT's), new DT's and replacement of aged transformers with energy efficient DT's and AMR/AMI Metering System.
- The above improvement works are planned for long term and the works are to be planned accordingly.

7.3.4 The funding pattern of EDP for its proposed capital expenditure plan is submitted as follows.

Table 13: Funding for Proposed Capital Expenditure for Control Period

(Rs. Crs)

Sr. No.	Sources of Funds	Component	FY 2015-16	FY 2016-17	FY 2017-18
1	Japan International Co-Operation Agency (JICA)	Debt	112.91	112.91	124.75
2	Power Finance Corporation (PFC)	Debt/ Grant*	40.15	40.15	-
A	**Total Debt (1+2)**		**153.06**	**153.06**	**124.75**
3	EDP Funding from Budgetary Allocation	Equity	44.36	46.82	48.67
B	**Total Equity (3)**		**44.36**	**46.82**	**48.67**
C	**Total Capital Expenditure (A+B)**		**197.42**	**199.87**	**173.42**
D	**Debt : Equity Ratio**		**78:22**	**77:23**	**72:28**

* PFC disbursement may be converted as grant on achieving the targets.

7.3.5 Based on the above funding the average debt equity ratio is 75:25. However the ratio may change based on the change in the debt component.

7.3.6 With respect to JICA loan, the process of availing the loan is still at a nascent stage and therefore the loan profile at present cannot be determined. However, it is expected that the servicing of the JICA loan including the hedging and interest cost will be ~6%. Therefore, EDP submits that the details about the JICA loan and the servicing of the same will be submitted to the Hon'ble Commission once the details are finalized.

7.3.7 The disbursement from PFC has been availed against the scheme under R-APDRP Part A and B. As per the Central Government scheme the same may be converted into grant if the operational targets are achieved. In case of non-achievement of those operational targets the same disbursements will be considered as loan which may have an interest rate of 12% - 13%. Therefore this is an early stage at present to consider the PFC disbursement as loan or grant.

7.3.8 Apart from the above loan there is an additional loan from REC availed in the previous financial year which will be serviced during the control period. The details of the loan are as follows.

- Loan drawn from REC: Rs. 35.74 Crs
- Moratorium period for loan repayment period is 3 years which ends on 31.03.2016.
- Repayment period: 13 years from the date of disbursement of first loan.

- Accordingly loan repayment starts from 30.03.2013 with Rs 3.57 Crs every year for the next 10 years.
- Interest rate of ~12% - 13%.

7.4 Gross Fixed Assets

7.4.1 The petitioner has proposed capitalisation of the assets during the control period in the ratio of 60:40 of the capital expenditure whereby 60% of the capitalisation in the first year and 40% in the succeeding years of the control period.

7.4.2 Based on above proposed capitalisation, the proposed GFA for the control period is as follows.

Table 14: Proposed GFA during the Control Period

(Rs. Cr)

Particulars	FY 2015-16	FY 2016-17	FY 2017-18
Opening GFA	603.84	722.29	921.18
Capitalisation	118.45	198.89	184.00
Closing GFA	722.29	921.18	1,105.19

7.4.3 The petitioner requests the Hon'ble Commission to approve the capital expenditure, source-wise funding and capitalization for the control period.

CHAPTER 8. O&M EXPENSES

8.1 Norms for O&M Expenses

8.1.1 The JERC (Multi Year Distribution Tariff) Regulations, 2014 notifies that the Hon'ble Commission will stipulate a separate trajectory of norms for each of the component of O&M expenses viz., Employee cost, R&M expense and A&G expense. The relevant extract of the Regulation is mentioned as follows.

"21. Operation & Maintenance Expenses

(a) The Commission shall stipulate a separate trajectory of norms for each of the components of O&M expenses viz., Employee cost, R&M expense and A&G expense.

Provided that such norms may be specified for a specific Distribution Licensee or a class of Distribution Licensees.

(b) Norms shall be defined in terms of combination of number of personnel per 1000 consumers and number of personnel per substation along with annual expenses per personnel for Employee expenses; combination of A&G expense per personnel and A&G expense per 1000 consumers for A&G expenses and R&M expense as percentage of gross fixed assets for estimation of R&M expenses:

(c) One-time expenses such as expense due to change in accounting policy, arrears paid due to pay commissions etc., shall be excluded from the norms in the trajectory.

(d) The expenses beyond the control of the Distribution Licensee such as dearness allowance, terminal benefits in Employee cost etc., shall be excluded from the norms in the trajectory.

(e) The One-time expenses and the expenses beyond the control of the Distribution Licensee shall be allowed by the Commission over and above normative Operation & Maintenance Expenses after prudence check.

(f) The norms in the trajectory shall be specified over the control period with due consideration to productivity improvements.

(g) The norms shall be determined at constant prices of base year and escalation on account of inflation shall be over and above the baseline.

(h) The Distribution Licensee specific trajectory of norms shall be identified by the Commission on the basis of absolute and relative analysis.

(i) In absolute analysis, Distribution Licensee's audited accounts of operations for last three years, expenses claimed for control period, historically approved cost, and prudence check shall be used by the Commission to estimate values of norms.

(j) In relative analysis, performance parameters of other Distribution Licensees within the same state or in other states shall be considered by the Commission to estimate norms.

Provided that other Distribution Licensees so chosen shall have similar profile as that

of the Distribution Licensee under consideration in terms of consumer mix, type of license area (city, state, etc.) type of distribution networks, viz., underground/overhead, HT-LT ratio, etc.

(k) Suitable average of outcomes of absolute and relative analysis shall be taken by the Commission to fix the norms over the control period for the Distribution Licensee.

8.1.2 As mentioned in the above extract of the Regulations, O&M norms have been derived in this particular section for approval of the Hon'ble Commission.

8.1.3 As per Clause 21 (b) of the MYT regulation, the Hon'ble Commission has specified the parameters for calculation of O&M norms such as number of employees, number of consumers etc. This parameter will be linked for the calculation of O&M expenses for the control period. However EDP feels that since the power sector is predominant by the consumption of electricity by consumers, therefore the important factors such as sale of power and sales mix may also be not ignored while calculating O&M expenses.

8.2 Computation of Inflation Index

8.2.1 As per Regulation 21, inflation index used for computation of employee cost, A&G and R&M expense is based on WPI and CPI. The WPI and CPI for the last three years are as follows.

Table 15: WPI and CPI for Last Three Years

Year	WPI (%)	CPI (%)
FY 2011-12	8.94	8.39
FY 2012-13	7.35	10.44
FY 2013-14	5.98	9.68
Average	**7.42**	**9.50**

Source: Office of the economic advisor and labour bureau

8.2.2 However as per the MYT regulations the inflation index for employee cost and A&G expense is linked to average of WPI of last three years and R&M expense is considered as an average of last three years CPI : WPI :: 60 : 40.

Table 16: Inflation Index for O&M Expense

O&M expense	Inflation Index
Employee cost	7.42
A&G expense	7.42
R&M expense	8.67

8.3 Employee Expenses

8.3.1 The following table shows the actual employee expenses incurred in the past for the last five years i.e. from FY 2009-10 to FY 2013-14.

Table 17: Actual Employee Expenses for the last five years

(Rs. Cr)

Particulars	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13
Salary	57.07	67.38	66.44	73.44
Wages	0.15	0.85	0.12	0.61
Stipend	0.16	0.22	0.32	0.35
Overtime allowance	0.75	0.76	0.95	0.58
Total	58.14	69.21	67.82	75.43
Less: Amount capitalized	1.47	11.88	9.40	9.00
Less: Departmental charges	2.93	1.89	1.75	1.16
Total Employee Expenses	**53.74**	**55.44**	**56.67**	**64.81**

8.3.2 The relevant extract with respect to employee cost in JERC (Multi Year Distribution Tariff) Regulations, 2014 is mentioned below.

" 21.1 Employee cost shall be computed as per the approved norm escalated by wholesale price index (WPI), adjusted by provisions for expenses beyond the control of the Distribution Licensee and one time expected expenses, such as recovery/adjustment of terminal benefits, Implications of pay commission, arrears and Interim Relief, governed by the following formula:

EMPn = (EMPb * WPI inflation) + Provision

where:

EMPn: Employee expense for the year n

EMPb; including yearly increments of employees, bonus, promotion. VRS.

Employee expense as per the norm

WPI inflation: is the average increase in the Wholesale Price Index (WPI) for immediately preceding three years

Provision: Provision for expenses as necessitated by the licensee due to expansion of the consumer base, yearly increments of Employees, and any expected one-time expenses as specified above."

8.3.3 As per the regulation, for treatment of employee cost, a provision has been additionally allowed as compared to the normal employee cost. Some of the illustrations considered by the Commission are recovery/adjustment of terminal

benefits, implications of pay commission, arrears, interim relief, expense due to expansion of consumer base, yearly increment of employees. However, EDP feels that increase in the employee base, costs related to promotion, incentives also need to be considered as one-time expenses. EDP is experiencing a surge in the consumer base and as a result there is an increase in its distribution network and in order to cater to this growing demand and provide efficient services it may have to incur additional expenses.

8.3.4 The inflation factor as per the provisions of MYT Tariff Regulations may be insufficient to cover increment factor, promotion factor, bonus, overtime etc. Covering inflation factor only would mean that salary of an employee shall remain always stagnant. Further, certain hike in salary is required to be given in case of promotions also.

8.3.5 The Regulation specifies that the employee expenses norms to be determined based on number of personnel per 1000 consumers and number of personnel per substation. The following table shows the number of personnel per 1000 consumers, number of personnel per substation and employee expenses per personnel for the last five years.

Table 18: Employee Parameters for the last five years

Particulars	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14
Number of employees at the end of the year	2,308	2,303	2,371	2,233	2,149
Number of consumers (in'000)	371	378	386	399	407
Number of employees per '000 consumers	6.22	6.10	6.15	5.59	5.28
Number of employees per Sub Station	20.19	20.25	20.37	19.43	19.90

8.3.6 Based on the MYT regulation, the Employee cost projected for the control period considering FY 2012-13 as the base period is given below.

Table 19: Projection of Employee Expense for the Control Period

Particulars	FY 2015-16	FY 2016-17	FY 2017-18
Employee Expense (Rs. Cr)	80.34	86.30	92.70

8.3.7 The impact of 7th pay Commission is not considered while projecting the expenses for the control period. However, in case the same is implemented by the Central Government, EDP would be submitting the impact of the same at the time of filing the true-up petition.

8.4 Administration and General Expenses

8.4.1 The following table shows the actual administration and general expenses incurred in the past for the last five years i.e. from FY 2009-10 to FY 2012-13.

Table 20: Administration and General Expenses for the last five years

(Rs. Cr)

Sr. No.	Particulars	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13
1	Office Expenses	1.26	1.69	1.60	1.38
2	Other Miscellaneous Expenses	2.01	2.02	2.69	2.44
	Total A&G Expenses	**3.28**	**3.71**	**4.29**	**3.82**

8.4.2 The relevant extracts from the regulation as per MYT regulations for A&G expenses are given below:

"21.3 A&G expenses shall be computed as per the norm escalated by wholesale price index (WPI) and adjusted by provisions for confirmed initiatives (IT etc. initiatives as proposed by the Distribution Licensee and validated by the Commission) or other expected one-time expenses, and shall be governed by following formula:

A&Gn = (A&Gb * WPI inflation) + Provision

where:
A&Gn: A&G expense for the year n A&Gb:
A&G expense as per the norm
WPI inflation: is the average increase in the Wholesale Price Index (WPI) for immediately preceding three years
Provision: Cost for initiatives or other one-time expenses as proposed by the Distribution Licensee and validated by the Commission."

8.4.3 The Regulation specifies that the administrative and general expenses norms to be determined based on combination of A&G expense per personnel and A&G expense per 1000 consumers. The following table shows the A&G expense per personnel and A&G expense per 1000 consumers for the last five years.

Table 21: A&G Expense Parameters for the last five years

Particulars	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14
A&G expense per employee (Rs.)	14,205	16,092	18,085	17,099	18,416
A&G expense per '000 consumers for A&G expense (Rs.)	88,347	98,107	111,220	95,651	97,208

8.4.4 EDP submits that it has been witnessing the decreasing trend in the number of employees in past and therefore arriving at the norm for determination of A&G expenses linked with the number of employees may result into the lower A&G expenses in ARR and resulting in lower realisation of revenue. Therefore, it is requested to determine the norms considering all the parameters which take care of the efficiency, financial viability and recovery of the legitimate cost. However, EDP has proposed the A&G expenses considering FY 2012-13 as a base with the inflation index as specified in the MYT Regulations.

Table 22: Projection of A&G Expense for the Control Period

Particulars	FY 2015-16	FY 2016-17	FY 2017-18
A&G Expense (Rs. Cr)	4.73	5.08	5.46

8.5 Repairs and Maintenance Expenses

8.5.1 The following table shows the actual repairs and maintenance expenses incurred in the past for the last five years i.e. from FY 2009-10 to FY 2013-14.

Table 23: R&M Expense and Parameters for the last five years

Sr. No.	Particulars	FY2009-10	FY2010-11	FY2011-12	FY2012-13
1	R&M Expenses (Rs. Cr)	11.57	10.74	16.18	9.92
2	R&M Expenses as % of GFA	2.86%	2.54%	3.53%	2.06%

8.5.2 The relevant extracts from the regulation as per MYT regulations for R&M expenses are given below:

" 21.2 Repairs and Maintenance (R&M) expenses shall be calculated as percentage (as per the norm defined) of Opening Gross Fixed Assets for the year governed by following formula:

R&Mn = Kb* GFAn* Inflation Index

where:
R&Mn: Repairs & Maintenance expense for nth year
GFAn: Opening Gross Fixed Assets for nthyear
Kb: Percentage point as per the norm
GFA : Gross Fixed Assets at the beginning of the Financial Year
Inflation Index is CPI : WPI :: 60 : 40s
CPI is Consumer Price Index issued by Govt. of India & these indices are for immediately preceding three years
WPI is whole sale price Index issued by Govt. of India & these indices are For immediately preceding three years."

8.5.3 Based on the past trend of R&M expenses in % to GFA, an average of 3% is the trend for the last 5 years. Therefore in line with the regulation, EDP proposes "K-factor" as 3% for projection of R&M expenses for the control period. The R&M expense for the control period is as follows.

Table 24: Projection of R&M Expense for the Control Period

Particulars	FY 2015-16	FY 2016-17	FY 2017-18
R&M Expense (Rs. Cr)	19.69	23.55	30.03

8.6 Additional Submission to the Hon'ble Commission

8.6.1 The relevant clause with respect to O&M expenses in the MYT regulations is mentioned below.

" 21 (a) The Commission shall stipulate a separate trajectory of norms for each of the components of O&M expenses viz., Employee cost, R&M expense and A&G expense. Provided that such norms may be specified for a specific Distribution Licensee or a class of Distribution Licensees. "

8.6.2 However, EDP would like to submit that every distribution licensee has a different consumer profile, sales mix, geographical area, network configuration, infrastructure requirement, etc and therefore requests the Hon'ble Commission to determine the norms for the distribution licensee considering the above internal factors. It is also submitted that MERC (Maharashtra Electricity Regulatory Commission) has issued MYT regulations, 2011 specifying separate O&M norms for different licensees.

8.6.3 Based on the above projections the petitioner requests the Hon'ble Commission to approve the O&M cost, A&G expense and R&M expense for the control period.

CHAPTER 9. PRAYERS TO COMMISSION

The Electricity Department, Government of Puducherry (EDP) respectfully prays to the Hon'ble Commission to:

9.1.1 Admit the Business plan of EDP for the Control Period FY 2015-16 to FY 2017-18 in accordance with Regulation 5 of JERC (Multi Year Distribution) Tariff Regulations, 2014.

9.1.2 Approve the Business Plan of EDP for the Control Period FY 2015-16 to FY 2017-18 in accordance with Regulation 4.2 and 5.1 of the JERC (Multi Year Distribution) Tariff Regulations, 2014.

9.1.3 Approve the principles and methodology proposed by EDP in the Business Plan.

9.1.4 Approve the capital expenditure and source of funding as proposed by EDP in the Business Plan.

9.1.5 Approve the O&M norms as prescribed in the Business Plan.

9.1.6 Approve the deviation from the norms prescribed by MYT Regulations, provisions thereof, as sought in this Business Plan during the control period FY 2015-16 and FY 2017-18.

9.1.7 Pass any other Order as the Hon'ble Commission may deem fit and appropriate under the circumstances of the case and in the interest of justice.

9.1.8 Grant any other relief as the Hon'ble Commission may consider appropriate.

9.1.9 Condone any error/omission and to give opportunity to rectify the same.

9.1.10 Permit EDP to make further submissions, addition and alteration to this Business Plan as may be necessary from time to time.

Annexure 1: AUDITED ANNUAL ACCOUNTS OF EDP FOR FY 2010-11

Annexure 2: PROVISIONAL AUDITED ANNUAL ACCOUNTS OF EDP FOR FY 2011-12

Annexure 3: PROVISIONAL AUDITED ANNUAL ACCOUNTS OF EDP FOR FY 2012-13

Annexure 4 – LIST OF PROPOSED WORKS UNDER JICA LOAN* -- TRANSMISSION STRENGTHENING SCHEMES (all Figures in Rs. Crs)

Sl.No.	Particulars	Projection			
		2015-16	2016-17	2017-18	Remarks
1	Establishment of 110/22 KV Lawspet SS, 110 KV cable laying works from 110/22 KV Kurumbapet Sub Station	18.00	18.00	24.00	* Preliminary Project Report sent to Government of India for scrutiny. * Loan size amount not finalised. * DPR for availing Loan is to be prpared. * In principle Approval/Sanction from Government of India not yet received. * Proposed work is to be carried out only on financial tie up.
2	Establishment of 230/110 KV Auto SS at Karaikal	8.09	8.09	10.79	
3	Establishment of Thondamanatham 110/22 KV SS with 2x25 MVA Power Transformer capacity.	3.12	3.12	4.16	
4	Augmentation of Capacity of Transformer at Bahour Auto SS from 80 MVA to 100 MVA	6.00	6.00	8.00	
5	Provision of additiomal 100 MVA Power Transformer at Villianur 230 KV SS	3.00	3.00	4.00	
6	Renovation and Modernisation of Villianur 230 KV Auto SS	4.50	4.50	3.00	
7	Establishment of 110/22 SS with 2x25 MVA Power Transformer near Thavalakuppam including Land acquisition and associated line portion	7.50	7.50	10.00	
8	Establishment of 110/22 SS with 2x25 MVA Power Transformer near Thirubuvanaipalayam including Land acquisition and associated line portion	7.50	7.50	10.00	
9	Establishment of 110/22 SS with 2x16 MVA Power Transformer at Vanjoore (Karaikal) including Land acquisition and associated line portion	7.50	7.50	10.00	

Sl.No.	Particulars	Projection			
		2015-16	2016-17	2017-18	Remarks
10	Laying of 110 KV cables to proposed Lawspet 110/22 KV SS from Kurumbapet and Vengata Nagar SS	18.00	18.00	24.00	
11	Augmentation of Transgormer capacity at Villanur 110 KV SS with each 2x25 MVA Power Transformer capacity	1.50	1.50	2.00	
12	Renovation and Modernisation and Augmentation of Transformer capacities at Kalapet 110/22 KV SS with 2x16 MVA.	3.00	3.00	4.00	
13	Renovation and Modernisation and Augmentation of Transformer capacities at Thettampakkam 110/22 KV SS with 2x16 MVA	3.00	3.00	4.00	
14	Renovation and Modernisation of 110/22-11 KV Marapalam SS	2.40	2.40	3.20	
15	Renovation and Modernisation of 110/11 KV Surakudy SS, Karaikal	1.20	1.20	1.60	
16	Replacement of Capacitor Banks at various Sub Stations.	1.50	1.50	2.00	
17	Erection/ establishment/ upgradation of 230kV and 110kV SS	18.69	19.62	20.61	

Annexure 5 - LIST OF ONGOING WORKS -- TRANSMISSION STRENGTHENING SCHEMES (all Figures in Rs. Crs)

Sl.No.	Particulars	Total cost	Expenditure booked upto 2013-14	Projection			
				2014-15 Balance payment	2015-16	2016-17	Remarks
1	Establishment of 110/11 KV Vengata Nagar SS	44.65	43.46	1.18	0.00	0.00	REC Loan. Balance payment to be made on receipt of final bill for additional quantity/ deviations.
2	Establishment of Thondamanatham 110/22 KV SS with 2x25 MVA Power Transformer capacity.	11.61	1.16	10.44			balance to be met from Plan fund/JICA Tentative estimate cost
3	Villianur 110/22 KV Sub Station R & M works	6.26	5.92	0.35	0.00	0.00	
4	Strengthening of 110 KV Villianur - Bahour line	6.60	4.95	1.65			
5	Extension of 2 nd circuit of 110 KV Villianur - Bahour line from 230/110 KV Auto Sub Station	0.73	0.07	0.07	0.29	0.29	
6	Land Acquisition for the proposed 110/22 KV Lawspet Sub Station.	10.26	1.75		3.17	3.17	Amount paid
			2.18				Proposal sent to Government
7	Establishment of 230/110kV Auto SS at Karaikal	30.30	3.03		13.64	13.64	Tentative estimate cost
R-APDRP							
1	R-APDRP PART- A works	13.79	4.17*		4.81**	4.81**	PFC Loan * loan availed **loan to be availed
2	R-APDRP PART- B works	84.78	14.10*		35.34**	35.34**	PFC Loan * loan availed **loan to be availed

Annexure 6 - PROJECTION OF OUTLAYS FOR THE DISTRIBUTION SCHEMES DURING THE PERIOD 2015-16 TO 2017-18 (all Figures in Rs. Crs)

Sl. No.	Name of Scheme	Expenditure booked during 2013-14		Projection of outlays		
			2014-15	2015-16	2016-17	2017-18
1	System improvement for reduction of transmission and distribution losses	5.91	5.86	7.20	7.80	8.00
2	Extension and development of power supply to all categories of consumers and street lights	9.79	11.11	9.85	10.35	10.50
3	Rural electricfication (BNP)	0.59	0.66	0.70	0.75	0.80
4	Provding meters for all consumers under 100% metering programme	0.55	3.12	3.60	3.75	4.00
5	Conversion of HT overhead Lines in to UG cables	3.68	4.12	4.32	4.54	4.77

Annexure 7 - REVISED PERCENTAGE ALLOCATION (FIRM+UNALLOCATED) FROM ISGS OF SR W.E.F. 02.06.2014

ANNEXURE (Page 3 of 3)

REVISED PERCENTAGE ALLOCATION (FIRM+UNALLOCATED) FROM ISGS OF SR

W.E.F.02.06.2014

From 00:00 hrs to 02:00 hr, 06:00 hrs to 18:00 hrs & 22:00 hrs to 24:00 hrs.

ISGS →	NTPC				NLC			NTECL	NPCIL		
	Ramagundam STPS		Talcher STPS	Simhadri STPS	TPS-II		TPS- I	Vallur STPS	MAPS	KAIGA GS	
Installed Capacity in MW →	Stage- I&II	Stage-III	Stage- II	Stage- II	Stage - I	Stage -II	Expn.	Unit-1&2		Units 1&2	Units 3&4
Beneficiaries	2100	500	2000	1000	630	840	420	1000	440	440	440
Andhra Pradesh	14.84	15.72	9.51	20.98	8.45	11.22	0.00	6.58	4.57	14.22	15.08
Karnataka	20.37	21.42	19.48	21.23	20.83	21.09	26.74	9.04	7.47	27.78	30.28
Kerala	11.83	12.37	21.38	9.18	10.12	10.84	18.38	3.43	5.28	8.83	8.15
Tamil Nadu	26.11	27.42	24.89	22.48	30.86	34.23	53.82	71.55	75.61	28.22	25.04
Telangana	17.41	18.33	11.11	24.60	9.91	13.14	0.00	7.70	5.36	16.63	17.81
Puduoherry	4.47	4.74	3.44	1.87	12.09	3.53	4.08	1.70	1.82	4.32	3.88
NLC- Mines	0.00	0.00	0.00	0.00	7.94	5.96	0.00	0.00	0.00	0.00	0.00
Goa	4.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orissa	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HVDC-Gazuwaka	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HVDC-Talcher	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HVDC-Kolar	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Percentage Allocation for Scheduling from NLC TPS-II from 00:00 hrs to 02:00 hr, 06:00 hrs to 18:00 hrs & 22:00 hrs to 24:00 hrs.

Beneficiary	NLC TPS-II	
	Stage - I	Stage -II
Andhra Pradesh	9.18	11.83
Karnataka	22.63	22.42
Kerala	10.99	11.63
Tamil Nadu	33.31	38.40
Telangana	10.78	13.97
Puduoherry	13.13	3.76
TOTAL	100.00	100.00